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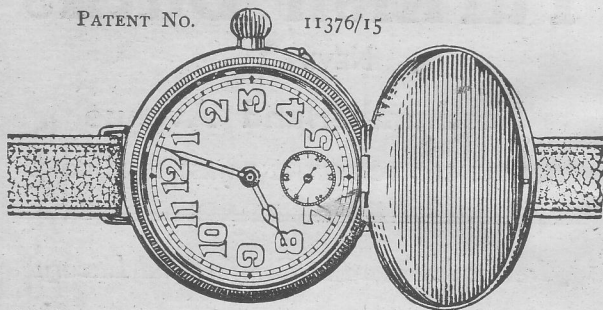


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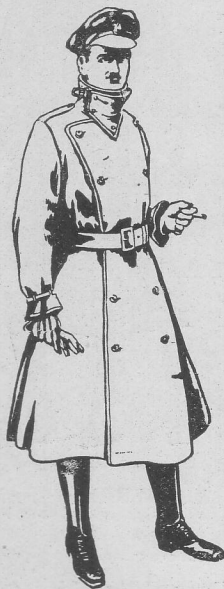
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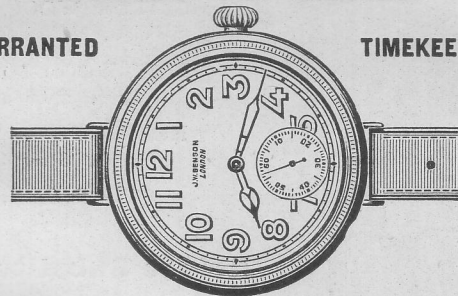
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Written by an Officer of the Regular Army

AND EDITED BY

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EDITOR'S NOTE

THIS book is based upon *Musketry Regulations, Infantry Training, 1914*, and other official training manuals of the British Army. The instruction it contains is throughout consistent in principles and methods with that laid down in the official manuals.

The Editor desires to express his thanks and acknowledgments to the Military Authorities and to His Majesty's Stationery Office for permission to reproduce illustrations and extracts from official Army publications. It is intended to keep each edition of this book abreast of the latest developments in the science with which it deals, and the changes made from time to time in the official training manuals.

E. JOHN SOLANO
 LONDON, 1915.

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MACHINE GUN TRAINING

CHAPTER I INTRODUCTION

I.—Notes on Experience gained at the Front.

1. The experience gained at the front in the present campaign may be divided broadly under two heads. Firstly, the test under war conditions of the general principles upon which the British Army has been trained in peace. Secondly, knowledge concerning the tactics of the enemy and his method of employing various arms. With regard to the former of these two heads of information, it is important to note *that the broad principles upon which the training of the British Army has been based are described by a General Officer as being sound, and that the need of paying strict attention to them in carrying out training is emphasized by him.* On the other hand, valuable experience has been gained as

to the best method of applying these general principles to the peculiar conditions which have so far prevailed in the present campaign, including the tactics adopted by the enemy. Information based on this experience, more especially so far as it concerns the employment of machine guns in attack and defence, is included in these notes, as it may prove useful to officers in training their commands.

2. These notes, therefore, do not affect the general principles of training laid down in this book. *They merely deal with the application of these principles to the peculiar conditions which have so far obtained in the course of the campaign.* These conditions may at any time give place to others, for it must be remembered that in no two military operations is the situation exactly the same. *Instructors, therefore, must avoid the mistake of training their men to any particular conditions of warfare, and remember that general principles and broad rules alone are applicable to the leading of troops in war (Infantry Training, 1914).*

3. **German Machine Guns.** (i) **Establishment.**—Each battalion has a company of four and sometimes six machine guns. Every man in this com-

pany is an expert in the gun. Each gun is considered to be worth 50 men or more. Their fire is considered to be the most effective method of discharging bullets, and an enormous amount of time, trouble, and ammunition has been expended on machine gun training.

(ii) **Employment in Attack.**—The Germans use machine guns in attack boldly and cleverly. They push them up close to hostile trenches, and in this way sometimes prepare the way for the infantry attack. In the attack on our positions these guns have sometimes been brought up by snipers before the infantry advances. Cases have even occurred in which they have brought their guns into farm buildings 10 or 15 yards in front of our trenches, and have rendered the latter untenable.

(iii) **Machine guns are used in large numbers against one or both flanks of the portion of the position which it is intended to attack.** They usually cross their fire, which makes them difficult to locate from the portion of the trenches opposite them. An attack has even been carried out solely with machine guns. The trench was engaged from a flank by six or seven guns,

while other machine guns succeeded in working round and enfilading the position.

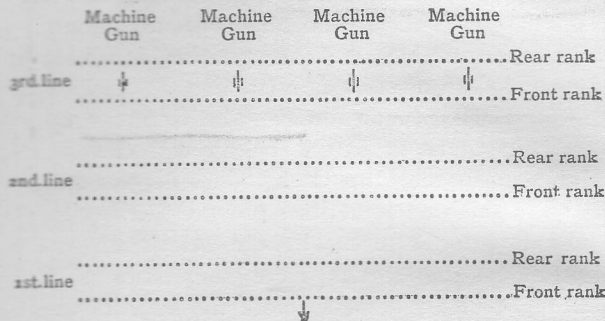


Fig. 1.—A GERMAN METHOD OF EMPLOYING MACHINE GUNS IN AN INFANTRY ATTACK.

A German plan of infantry attack in close formations. The first double line is looked on as cover from bullets for the second and third double lines, to enable these two lines to get closer with the minimum of loss. The Germans reckoned on their third line with their machine guns being able to get within 400 yards. They have, however, never been able to do this over open ground against the British, owing to the efficiency of British musketry fire—because their first line was down too soon—sometimes at 800 to 1,000 yards. If their third line is held up, they have standing orders to dig in at once, and for this purpose the third line carries shovels and small picks. (See pp. vii-ix *Musketry* of this Series.)

(iv) The exact range is usually obtained by opening bursts of fire as soon as a suitable fire position has been occupied, after which the Germans satisfy themselves by preventing the defenders, as far as possible, from showing above the parapet, thus enabling their own troops to approach in security. The closer they can approach a trench, the more oblique becomes their fire. The duration and volume of the fire depend on the ground over which the advance of their own infantry has to be made, but they are careful to husband their ammunition, as the ammunition supply is the chief difficulty with these guns.

(v) When the advance of their own infantry has passed the machine guns, the Germans try to place the latter in positions whence they can assail the enemy as he retires from his trenches, or, alternatively, in the event of a counter-attack, to open fire in such a way as to allow their own infantry to withdraw.

(vi) Employment at Night.—The Germans do not often make use of machine guns at night. On one occasion, when a machine gun maintained fire longer than usual as it was getting

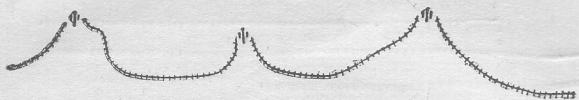


Fig. 2.—GERMAN MACHINE GUNS IN POSITION WITH WIRE ENTANGLEMENT.

German machine guns in position are combined with wire entanglements as here shown. The apparent gap in the entanglement is purposely made to draw the attacker into the field of fire of the gun.

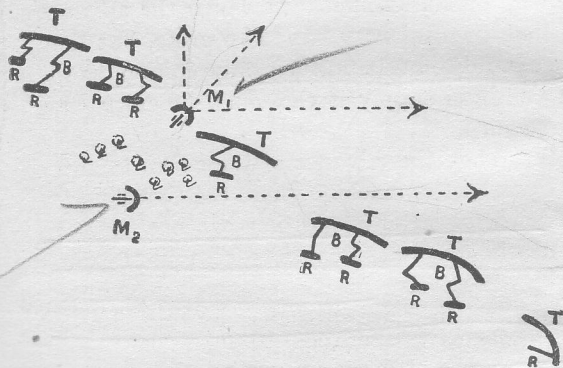


Fig. 3.—PLAN OF GERMAN TRENCHES DESIGNED FOR A BATTALION WITH EMPLACEMENTS FOR MACHINE GUN FLANKING FIRE.

T. Rifle trenches ; R. Trenches for supports ; M. Machine gun emplacements ; B. Communication Trenches.

dark, its flashes were observed, and it was put out of action by rifle fire. Except when it is necessary to stop an infantry attack at short range, the heavy expenditure of ammunition, coupled with the small results obtained, render night firing with machine guns of doubtful value.

(vii) *Employment in Defence.*—The German guns are usually posted singly or in pairs, and frequently wait for an opportunity for surprise by opening fire with great effect at close range. The enemy display great skill in posting machine guns on a flank, so as to bring enfilade fire to bear on the attacking troops. In the encounters which took place in Belgium the Germans on several occasions brought up their machine guns immediately behind their most advanced line of infantry. They hid them (as, for instance, on the first-floor of houses), and allowed the enemy to advance past them, and then opened fire on them from the rear.

4. *Choice of Positions.*—(i) Machine guns are easily put out of action by artillery fire. Great care is therefore necessary in selecting positions for our machine guns, and in occupying them without attracting attention.

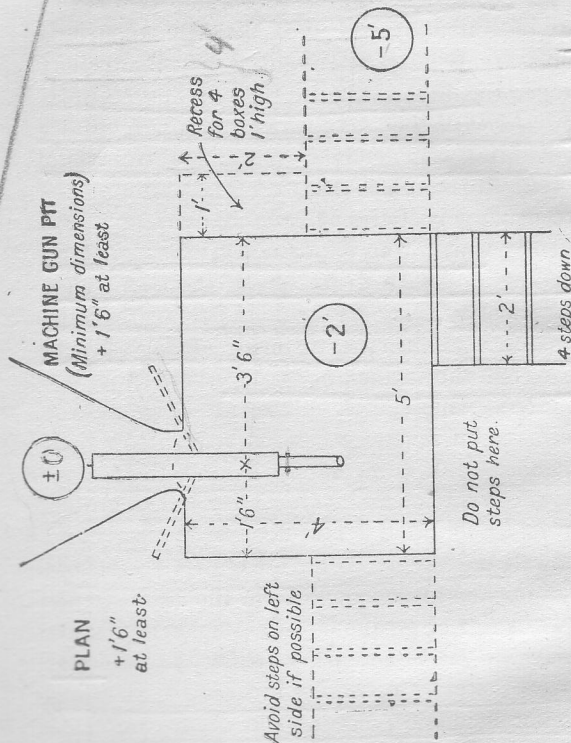


Fig. 4.—MACHINE GUN PIT.

(ii) Sites.—Sites for machine guns must be selected with the greatest care, so as to give cross or flank fire. The emplacement must be concealed, and every effort must be made to ensure protection for the gun and detachment and surprise for the attackers. Sites for frontal

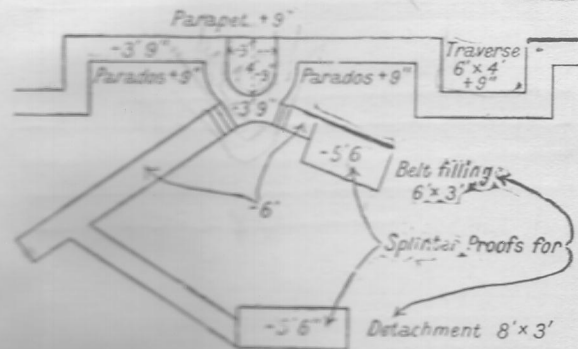


Fig. 5.—MACHINE GUN PIT IN LINE OF FLANK TRENCHES.

fire can only be used successfully in very exceptional circumstances. The emplacements should be provided with overhead cover, wire-netting protection against bombs, etc., and easy ramp or steps as exit. Alternative emplacements should be provided.

(iii) Position in the Trenches.—It is essential to protect a machine gun from frontal fire by means of a traverse. A machine gun in this position should not disclose itself until the enemy is within 100 yards of the trenches. It is well to have spare sandbags at hand, so that cover may quickly be improved. A machine gun will soon cut down a traverse made of ordinary earth, and a traverse specially meant to withstand machine gun fire should consequently include gravel or a piece of iron in its composition.

II.—General Information.

1. Establishment of Machine Gun Section—

I. TRANSPORT.

Detail.	Vehicles.	Drivers.	Horses.
Waggons, limbered, G.S., for 4 machine-guns, tripods, ammunition, and 4 ammunition pack-saddles*	2	4	8
Waggons, limbered, G.S., for ammunition	2	2	4
Total	4	6	12

* For lead-horses.

Information regarding the formation of a Machine Gun Corps and the new establishment of a Machine Gun Company will be found in the Appendix (p. 124).

2. PERSONNEL.

Detail.	Personnel.			
	Officers.	Staff-Sergeants and Sergeants.	Rank and File.	Total.
Subaltern*	1	—	—	1
Sergeants	—	2	—	2
Corporal	—	—	1	1
Privates†	—	—	24	24
Drivers (first line transport)	—	—	6	6
Bikemen‡	—	—	1	1
Total machine gun section	1	2	32	35

* The section commander is supplied with a horse.

† In India, owing to pack transport, four privates from the reserve section (see Sec. I, para. 1) are added as mule-holders.

‡ Bikemen are fully armed and trained soldiers, and are available for duty in the ranks.

2. Programme of Training.—(i) The programme of training, set out in the table facing p. 12, is issued as a guide only, to assist brigade machine gun officers and section officers in the training of their sections. It is not

SUGGESTED PROGRAMME FOR THE TRAINING OF MACHINE GUN SECTIONS.

F.S.M. — Field Service Manual (Infantry); Musketry — Musketry (Imperial Army Series). All the Sections and Paragraphs in the Table which are not preceded by the above reference letters and words will be found in this book.

3. Different Types of Machine Guns.—Various types of machine guns are at present (1915) used by the Imperial Forces. They consist of: (i) Maxim gun (converted '45); (ii) Maxim gun ('303); (iii) Vickers gun; (iv) Vickers gun (Italian pattern); (v) Lewis gun; and (vi) Colt gun. The first four are all recoil operated, and the last two are gas operated. Nos. (i) to (iv) inclusive are cooled by water, and Nos. (v) and (vi) are air-cooled. Full information regarding these various guns is contained in the respective handbooks which deal with them. *It is important to note that the general tactical principles laid down as governing the use of machine guns in warfare are identical for every class of this weapon.*

CHAPTER II

MACHINE GUN DRILL

Section 1.—General Information.

1. Establishment of Machine Gun Section.—

The non-commissioned officers and privates shown in the establishment of a machine gun section on p. 11 will be trained as the battalion machine gun section. A similar number of non-commissioned officers and men will in addition be trained, as opportunity offers, to replace casualties.

2. Commander of Section.—A subaltern officer other than the assistant adjutant, will be selected in each battalion to command and train the machine gun section, under the orders of the battalion commander. In each brigade an officer, who is not the machine gun officer of one of the battalions of the brigade, will be selected to supervise the firing practice and to

conduct the brigade training of machine gun sections.

3. Qualities of Machine Gunners.—Soldiers selected for duty with a machine gun section should possess, as far as possible, the following qualifications:—*Good physique, Good eyesight, Calm temperament, Fair education, Mechanical aptitude.* It is most important that men selected for the machine gun section should remain with it as long as possible, in order that they may acquire a high standard of skill. Young soldiers of about a year's service are therefore the most suitable for selection.

4. Musketry Training of Machine Gun Section.

—The officer, non-commissioned officers, and men of the machine gun section will fire the range practices prescribed for the rifle in the Musketry Regulations with one of the companies of the battalion. The classification of detachments will be determined by battalion commanders after the annual machine gun course. This paragraph applies also to special reserve battalions, whether the machine gun sections belong to the battalion or are detailed for armament coast defence guns, except that

machine gunners of such battalions will not be classified.

5. Annual Training of Machine Gun Sections.

—The elementary training, which may be carried out in the neighbourhood of barracks, will consist of instruction in the mechanism of the gun; in adjusting the tripod, mounting and dismounting the gun; in the drill and methods of laying, ranging, and firing; in packing and unpacking limbered waggons; in filling a belt quickly and correctly; in the use of the range-finder; in semaphore signalling, and in the signals for the observation and control of fire.

6. As soon as the men of a section are thoroughly conversant with the mechanism, and have qualified in the tests of elementary training for the machine gun, their further training will be carried out, as far as possible, in the open country away from barracks. During this training the sections should be practised in bringing the gun into action, in fire discipline, in fire control, in laying and ranging in every variety of country, in utilizing natural cover when advancing into action, and in constructing cover from both view and

fire. The men should also be trained in range-taking, judging distance, and in the use of field-glasses.

7. When the section is proficient in these branches of training, the battalion commander will arrange for it to be trained with one or more companies which have reached the more advanced stages of company training, in order that it may be practised in co-operating with other troops, and in dealing with such situations as would confront it in war.

8. Care and Mechanism of Guns.—Details regarding the mechanism, care, cleaning, maintenance, and repair of various patterns of the *Maxim, Vickers, Lewis* and *Colt* machine guns are contained in the respective handbooks of these guns.

9. Signalling.—Machine gunners must be trained thoroughly in the semaphore system of signals, and should pass periodical tests of proficiency. (See *Signalling* of this series.)

Section 2.—Drill of the Machine Gun Section.

1. Elementary Training.—The elementary training of the machine gunner will be carried out as directed in Sec. 1. He must be taught at an early stage to hold the gun so that sufficient pressure is applied to the handles to check its vibration without transferring the vibration to the mounting.

2. *Machine guns vary considerably, and such variations can only be counteracted by a thorough knowledge of the particular gun and by skilful holding.* Whenever the gun is laid, the holding should be such as would be employed in actually firing service ammunition. This can only be judged by the man himself, but it should be impressed upon him that the habit of good holding is most important.

3. An early opportunity should be taken to demonstrate the necessity for correct holding. This may be done by a trained gunner firing a few rounds of ball ammunition at .30 yards range with different pressures on the handles. During this elementary training untrained



Fig. 6.—METHOD OF SUPPORTING GUN WHEN BEING MOUNTED.
Note how the weight should rest on No. 2's right leg (kneeling figure). This greatly facilitates his work.



Fig. 7.—GUN MOUNTED FOR FIRER IN SITTING POSITION.
Tripod normal height. Bracket upright.

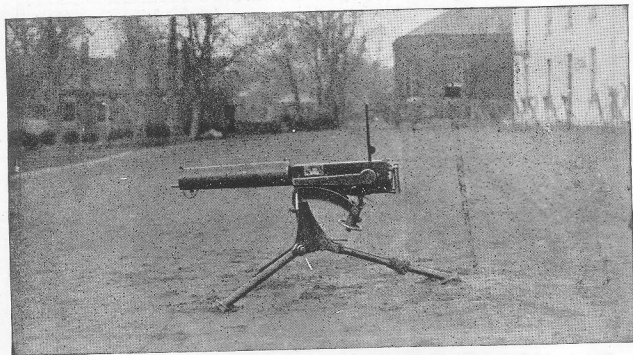


Fig. 8.—TRIPOD INCORRECTLY ERECTED—BRACKET LEANING FORWARD.

The result of this fault will be that if fire has suddenly to be opened in a new direction the tripod will have to be readjusted before this can be done (Fig. 9).

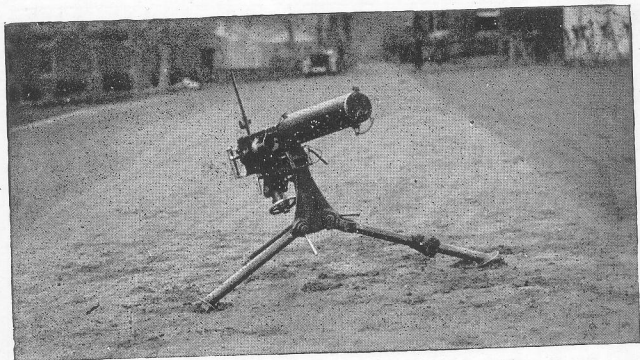


Fig. 9.—TRIPOD INCORRECTLY ERECTED.

Effect on gun when changing direction with leaning bracket.

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gunners should attend on any occasion when firing is being carried out. They should also be present when the gun is stripped by the armourer.

4. Allocation of Duties—(i) Section Officer.—The duties of the section officer are to command his section in accordance with his orders and the tactical situation; to select gun positions, to observe, and to control fire generally; to regulate the ammunition supply, and to give instructions regarding the movement of unlimbered waggons. When guns are brigaded, he acts under the instructions of the brigade machine gun officer, watches for signals, and acts as the brigade machine gun officer may direct.

(ii) **Sergeant.**—The duty of the sergeant is to supervise guns coming into action as the section officer may direct. He must be prepared to take command of the section in the event of the officer becoming a casualty.

(iii) **Corporal.**—The corporal is generally responsible for the packing and contents of the limbered waggon. On the line of march he marches behind it and works the brake as

required. On the order to unpack, he will lower the tail-board, superintend the unpacking, and take command in the absence of the section officer or sergeant. He will see that Nos. 4 put their own rifles as well as those of Nos. 1, 2, and 3 in the waggon. He will have the spare parts box handy, supervise the ammunition supply and filling of belts, direct the limbered waggon as required, superintend the filling of sandbags and cutting of brushwood, and watch for signals from the section officer. He will be prepared to take the place of the sergeant should he become a casualty.

(iv) **Men of Section.**—The following are the duties of the various numbers:

No. 1 is the firer. He will personally clean and look after his gun and ensure that the mechanism is working smoothly. On going into action, he will carry the tripod and place it in a suitable position, and assist **No. 2** in mounting the gun. He repeats all orders received, observes his own fire, and makes necessary alterations of elevation and direction.

No. 2 assists **No. 1** at the gun, carries the gun into action, and mounts it with the assistance

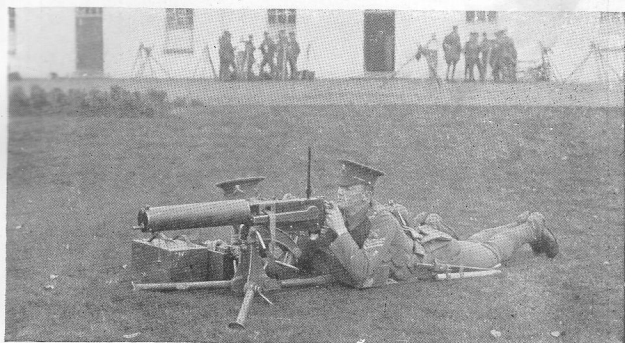


Fig. 10.—GUN MOUNTED IN LOWEST POSITION—FIRER'S LEGS REARWARD.

Note the ammunition boxes used for protection in front of **No. 2**.

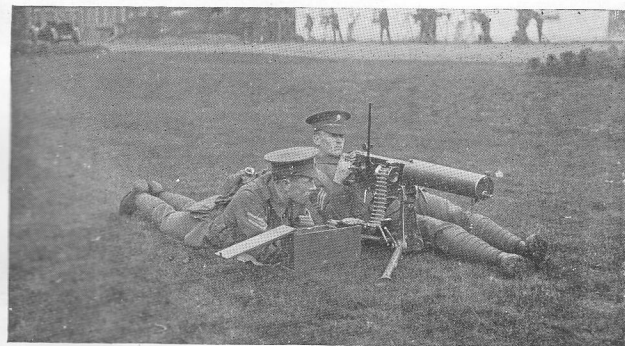


Fig. 11.—GUN MOUNTED IN LOWEST POSITION—FIRER'S LEGS FORWARD.



Fig. 12.—FIRING DOWN A STEEP SLOPE.

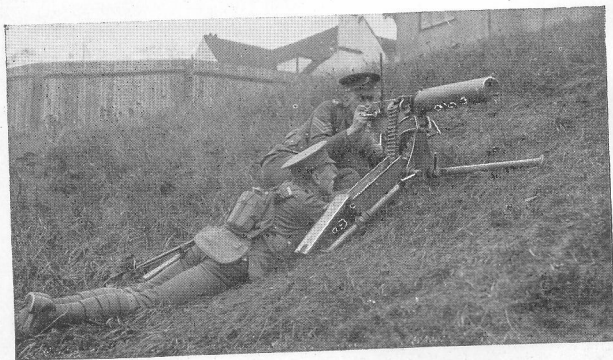


Fig. 13.—FIRING ALONG A STEEP SLOPE.

The gun has been firing down a steep slope as in Fig. 12, and fire is suddenly directed to a flank.

2] MACHINE GUN SECTION DRILL 21

of No. 1. In action he will attend to the feeding of the gun, watch for signals from the section or brigade machine gun officer, and generally assist No. 1.

Nos. 3 and 4 are ammunition carriers. No. 3 takes the first supply of ammunition to the gun, assisted by No. 4, and arranges that the spare parts wallet is brought up to the gun position. No. 4 takes the ammunition from the limber to No. 3 when a further supply is required. He also takes the condenser complete and half-filled with water. No. 3 is responsible that the condenser * reaches the gun position before there is any chance of the water boiling. No. 4 places his own rifle and those of Nos. 1, 2, and 3 in the limber.

No. 5 acts as scout, as ordered by the section officer.

* The condenser is an attachment fixed to the Maxim and Vickers guns to prevent the escape of steam from the water used for cooling the gun betraying its position. The condenser consists of a canvas bag filled with cold water, to which steam from the escape hole on the barrel casing of the gun is conducted by means of a tube. The water in the casing may boil after about 500 rounds continuously fired. No. 3 must have the condenser ready to fit before the water in the jacket boils.

No. 6.—One No. 6 is the range-taker. He will take ranges and prepare range-cards (see Sec. 40, *Musketry*, of this series). The other No. 6 is a spare man, and acts according to the orders he receives from his officer.

5. Selection of Men for Various Duties.—In allotting the various duties, section officers should select the men who show a particular aptitude for each duty, and the next best should be those who would probably be most quickly available on service to replace a casualty. The results obtained in Table C, in Range-Takers' Tests, and in Tests in Belt-Filling, will assist section officers in detailing the numbers, and for this purpose they will keep careful record of the characteristics and particular aptitude of each man. Nos. 1, 2, and 3 should be the best in that order of merit at laying and holding, Nos. 5 and 6 at range-taking, and No. 4 at belt-filling.

6. Exchange of Duties.—In peace, the numbers should frequently change round, so that each may be trained in the duties of all numbers under various conditions. The sergeant should similarly be practised in the duties of section officer, and the corporal in the duties of sergeant.



Fig. 14.—GUN IN ACTION BEHIND WALL.
Tripod in highest position.



Fig. 15.—GUN IN ACTION BEHIND WALL—VIEW FROM
DIRECTION OF ENEMY.

If the barrel casing had been covered with bracken, etc., or otherwise suitably concealed, the gun would be invisible, and its position might be extremely difficult to locate.

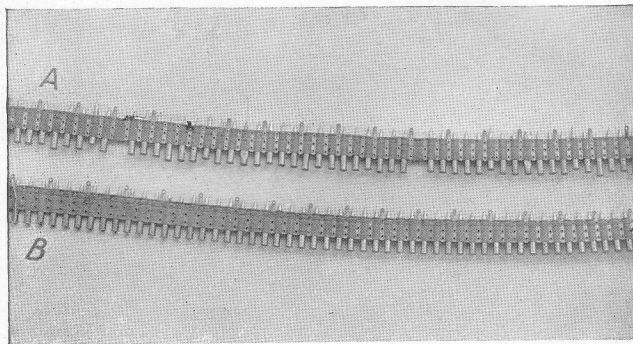


Fig. 16.—BELT-FILLING.

(A) A badly-filled belt. (B) A correctly-filled belt. A badly-filled belt will at once cause a stoppage. The standard test for belt-filling is 25 rounds in 1 minute or 250 rounds in 12 minutes.

Section 3.—Section Drill without Transport.

1. The guns, with tripod and ammunition boxes, will be placed on the ground, muzzles to the front and in line, legs to the rear, straps lapped round the rear leg and buckled, and clamps sufficiently tight to prevent the legs from hanging loose when the tripod is lifted off the ground. The traversing clamp should be sufficiently loose to enable the gun to be deflected by a sharp tap with the hand on the rear cross-piece. The guns will be on the right of the tripods and the ammunition boxes three paces in rear of the guns. The guns should be a convenient distance apart, but not closer than eight paces.

2. On the command **Fall in**, the detachments for each two guns will fall in in two ranks, five paces in front of the interval between the guns; the sergeant on the left of the front rank, covered by the corporal in the rear rank. The front rank will provide the right gun detachment, the rear rank the left gun detachment.

On the command **Number**, the section will number off.

On the command **Take Post**, detachments turn outwards and double to their respective guns (the sergeant and corporal on the outer flank, where they can superintend). Nos. 1 and 2 fall in on the left of the tripod and right of the gun respectively, No. 3 on the left of the ammunition box. If the ground is suitable, these numbers should lie down.

Nos. 4, 5, and 6 fall in, in single rank, in rear of No. 3.

3. A landscape target should be placed about 25 yards from the guns. The instructor having pointed out a spot, not more than 5 yards away from where the guns are lying, where each gun will be mounted, will give the command **Mount gun**. No. 1 picks up the tripod, having previously seen that both elevating screws are exposed the same distance, carries it to the spot ordered, and places it in position (Figs. 8 and 9). In adjusting the tripod, he must insure that the cross-head is upright, and that the legs are clamped tight. He must learn by experience the adjustment that suits him best for the position ordered and

for the nature of the ground, so that he will not be cramped when firing and will not have to alter the tripod after the gun has been mounted.

As soon as the tripod is nearly in position, No. 2 picks up the gun and carries it to the right side of the tripod, holding the rear cross-piece with the left hand, with the gun muzzle to the rear, under the right arm. He then kneels on the left knee, facing the tripod, and, supporting the weight of the gun on the right knee, places it on the tripod, drives in and turns down the cross-head joint-pin, and removes the cork plug from the steam escape hole (Fig. 6). No. 1 fixes the elevating joint-pin, and directs the gun towards the mark. Meanwhile, No. 2 kneels and places the ammunition box in position.

No. 2 should time his advance so as to reach the tripod at the moment its adjustment is completed.

When No. 3 sees the gun is nearly mounted, he carries the ammunition box forward and places it within reach of No. 2. The ammunition must be at hand directly No. 2 is ready for it. No. 3 then retires to a position not immediately in rear of the gun.

4. On the command **Load**, No. 1 at once raises the tangent sight, No. 2 passes the tag of the belt through the feed block. No. 1 turns the crank handle on to the buffer spring, and with his left hand pulls the belt straight through to the left front as far as it will go, and lets go the crank handle; he releases the strain on the belt, then turns the crank handle on to the buffer spring; he again pulls the belt to the left front, and lets go the belt and crank handle. The gun is now loaded and ready to fire. Each motion should be distinct and clean.

5. On the command — (*Giving range*), No. 1 repeats the order for his own gun, and adjusts the slide to the elevation required for the distance ordered.

6. On the command — (*Indicating the target*), No. 2 adjusts the traversing clamp if told to do so by No. 1, and No. 1 lays the gun, maintaining the same pressure on the handles while laying as he would when firing.

7. When the gun is laid No. 1 raises the automatic safety-catch with the forefinger, and prepares to fire. When No. 1 is ready, No. 2 holds up his hand. As proficiency increases,

the pause between naming the range and the aiming mark should be slight.

8. On the command **Fire**, No. 1 presses the double button.

9. On the command **Cease Fire**, No. 1 releases the automatic safety-catch, and remains steady.

10. **Traversing Fire.**—(i) Frequent instruction will be given in traversing fire. The firer must first ensure that the traversing clamp is just sufficiently loose to enable the gun to be deflected by means of a sharp tap with the hand on the rear cross-piece. Each man must learn by experience the exact degree of clamping he requires, and before firing he should ensure that the clamp is correctly adjusted to suit himself.

(ii) Traversing fire is applied by means of a series of groups fired at regular intervals within certain limits indicated by such figures on the target as may be ordered by the instructor. The target will be the instructional machine gun target (Figs. 48 and 49).

(iii) **Horizontal Traversing.**—The procedure for horizontal traversing is as follows:

The instructor having described the figure

between which fire is to be directed, will give the command **Traversing Fire**. The firer will lay the gun on the flank figure named and press the button, then tap the gun approximately to the centre of the interval to the next figure, again press the button, then tap and so on until the limit ordered has been reached. The firer should be taught to fire groups of about eight rounds by maintaining pressure on the button for about one second at each group. By this method he learns to tap the gun with the necessary force in order to avoid firing more than one group at the same place, and also to avoid leaving gaps unswept by fire in the line he is traversing.

(iv) **Diagonal Traversing**.—As proficiency increases, instruction should be given in diagonal traversing. In this case the target will be three bands each with three figures as for horizontal traversing. The bands will be joined so that each of the outer bands is in the same vertical plane as the centre band, and forms an angle of 120 degrees with it. In this case the firer is taught to combine the use of the elevating wheel with tapping for deflection. The same principles as for horizontal traversing apply for this

diagonal traversing. Instruction should be afforded in traversing from right to left as well as from left to right.

(v) **Checking the Laying**.—During the instruction fire should be stopped at least twice in order to check the laying, and also to measure the distance traversed. By comparing the distance traversed with the number of groups fired, an estimate can be deduced as to the value of the traversing fire. For example: Traversing fire is ordered from the first to the sixth figure; fire is stopped after the fourth group. If the traverse has been correctly carried out, the gun should be laid on the interval between the second and third figures.

11. On the command **Unload**, No. 1 lowers the tangent sight but not the slide, turns the crank handle twice in succession on to the buffer spring, letting it fly back each time on to the check lever; then presses up the finger-pieces on the lower pawls, while No. 2 withdraws and repacks the belt in the box; this must be done correctly, and the lid closed and fastened. No. 1 clears the ejector-tube and lock, and releases the lock spring by pressing the double button.

12. On the command **Dismount gun**, No. 1 removes the elevating joint-pin; No. 2 replaces the cork plug, passes the ammunition box to No. 3, removes the gun as in mounting, and replaces it in its original position in rear. No. 1 follows with the tripod. On reaching the original position, he sees that the joint-pins are home and turned down, and then folds and clamps the legs.

13. **Miscellaneous Instruction.**—Instruction should be afforded in bringing the gun into action in the *several positions of the tripod*, and in various natures of ground. *Firing up, down*, and *along* the side of steep hills should be practised. Practice should also be afforded in mounting the gun from the prone position, in firing from the lying position, and when kneeling on both knees, as well as when sitting (Figs. 7 and 10-14).

14. **Belt-Filling.**—The corporal, all the numbers, and also the drivers of the limbered waggon and S.A.A. cart when available, should be instructed and frequently practised in belt-filling, both by hand and with the belt-filling machine* (Fig. 16).

* For description and method of using the belt-filling machine, see the handbooks of the Maxims and Vickers guns.

Section 4.—Drill with Limbered Waggon and Pack Transport.

1. **Drill with Limbered Waggon.**—The detachment will be formed up in two ranks six paces from the rear of the waggon facing outwards.

On the command or signal **Action** the driver dismounts and stands to his horses. The sergeant and Nos. 5 and 6 double out to the section officer. The corporal lowers the tail-board and superintends the unpacking. The remaining numbers ground arms on the word of command of the senior number and fall out to the waggon to perform the duties detailed in Sec. 2, paras. 4 and 5. The corporal selects a suitable covered position for the limbered waggon, if necessary.

2. On the command or signal **Dismount guns**, the procedure for unpacking is reversed, and when completed, detachments fall in, and take up arms by word of command.

3. **Drill with Pack Transport.**—Normally mules will be lead by Nos. 1, 2, 3, 4, 7, and 8. On the command **Prepare for action**, Nos. 2, 3, 7,

and 8 will link their mules to those immediately in front of them. Nos. 7 and 8 will lead Nos. 1 and 4 mules, Nos. 1 and 2 will march on the tripod and gun sides respectively of No. 1 mule, and loosen straps. Nos. 3 and 4 will march on either side of No. 2 mule.

4. On the command or signal **Action**, No. 1 will off-load the tripod, and No. 2 the gun. No. 3 will off-load the leading ammunition animal. The corporal will select a suitable covered position for the pack animals. The other duties of the various numbers are as in Sec. 2, paras. 4 and 5.

5. On the command or signal **Stand to**, Nos. 1, 2, and 3 will reverse the actions of off-loading. The detachment will then form up for marching.

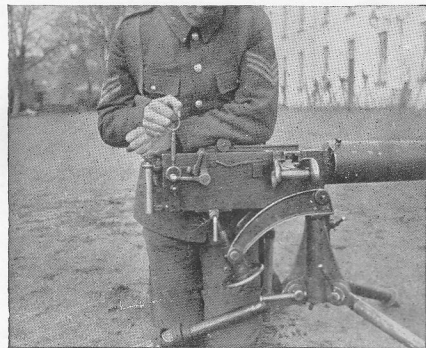


Fig. 17.—METHOD OF TESTING THE WEIGHT OF FUSEE SPRING.

This must always be done before action, and whenever action is probable. Gunners must know the weight necessary to ensure the smooth working of each particular gun.



Fig. 18.—METHOD OF TESTING THE FRICTION OF RECOILING PORTIONS.

This is another necessary step before action, and whenever action is probable.

To face p. 32.



Fig. 19.—STOPPAGES—NORMAL POSITIONS OF CRANK HANDLE.
This picture shows the four positions of the crank handle when a stoppage occurs. Its position indicates to the gunner the probable nature of a stoppage, and thus enables him to remedy the cause without delay.

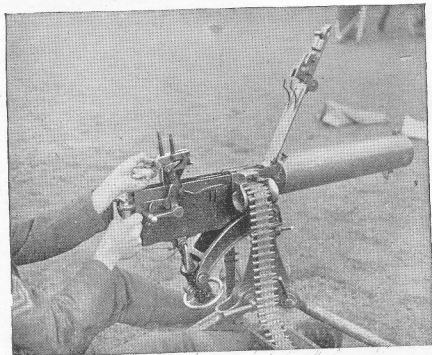


Fig. 20.—METHOD OF HOLDING THE LOCK BEFORE CLEARING EXTRACTOR.

When a stoppage occurs it is frequently necessary to clear the face of the extractor. This is done in a moment by a well-trained No. 1, either with his thumb or a piece of wood. The method of holding the lock must be noted.

To face p. 33.

CHAPTER III MACHINE GUNS IN BATTLE

Section 5.—Characteristics of Machine Guns.

1. Frontage.—A machine gun in action requires a frontage of about two yards. From this narrow front it can deliver a fire equal in volume to that of about thirty men firing rapidly, the frontage required for the latter being at least fifteen times as great. It is therefore easier to find a concealed position for a machine gun than for the number of riflemen required to produce an equal volume of fire (Figs. 36 and 41).

2. Vulnerability.—When well concealed by screening or the effect of background (Figs. 38 and 34), the gun offers a difficult target, and, as only two men are required for its service, it is not put out of action should these become casualties, provided the remainder of the detachment are trained to take their places (Figs. 42 and 43).

3. Fire Effect.—As regards fire effect—

(i) **Range.**—The effective range of the machine gun may be taken as equal to that of the rifle.

(ii) **Concentrated Fire.**—It has been found by experiment that the fire of a machine gun is about twice as concentrated as that of riflemen firing an equal number of rounds at the same target.

4. Fire Control.—In the important matter of control of fire the machine gun has several advantages. Once the gun is loaded and laid, fire can be turned on or off instantaneously; it can be directed as readily as required, and can be distributed laterally by traversing.

5. Mobility.—By mounting a few men on the limbered waggon, the guns can be moved rapidly from place to place, while a machine gun with tripod mounting can be taken wherever men on foot can go.

6. Comparative Disadvantages.—On the other hand, the machine gun has certain disadvantages as compared with riflemen:

(i) **Disability on the Move.**—It is more defenceless when on the move, whether carried in the limbered waggon or on pack transport.

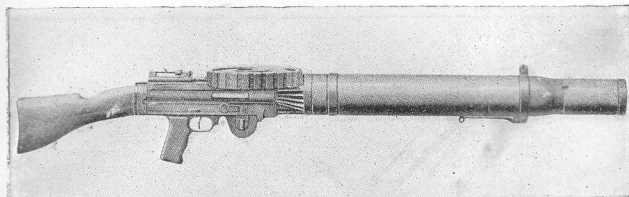


Fig. 21.—LEWIS AUTOMATIC MACHINE GUN.

Full particulars regarding this gun will be found in the Handbook regarding it. The gun can be used mounted on a tripod in the same manner as the Maxim and Vickers machine guns, or it can be fired from the shoulder.



Fig. 22.—LEWIS GUN FIRED FROM THE SHOULDER.



Fig. 23.—LEWIS GUN FIRED FROM COVER.

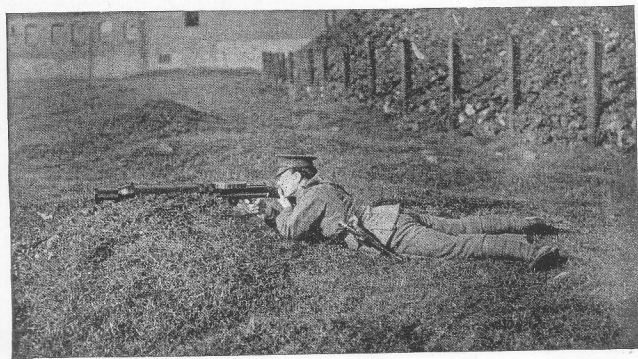


Fig. 24.—LEWIS GUN FIRED FROM FOLD OF GROUND.

(ii) **Errors.**—Owing to the concentrated nature of its fire as compared with a similar amount of rifle fire, the effect of small errors in aiming or elevation is greater. Thus, a comparatively small error at effective or long ranges will cause the fire of a machine gun to miss altogether a target which would probably be struck by several shots from riflemen making the same error in aim or elevation.

(iii) **Stoppages.**—The mechanism of the gun is liable to temporary interruption.

(iv) **Effect of Sound and Steam.**—The peculiar noise of the automatic firing attracts attention to the gun, and when steam is given off, owing to the water in the barrel casing boiling, the position of the gun can be readily located unless well concealed.*

* The effect of steam is obviated by use of condenser (see footnote to p. 21). Steam is of course altogether obviated in the case of air-cooled machine guns.

Section 6.—General Principles of the Employment of Machine Guns by Infantry.

1. The general principles governing the employment of machine guns are based upon the characteristics described in the previous section.

2. Special Usefulness of Machine Gun.—

(i) The machine gun is a powerful auxiliary to, and well adapted for close co-operation with, infantry.

(ii) The concentrated and accurate nature of its fire, and the speed with which it can be directed on the objective, suits it for the development of surprise effect and covering fire at effective and close infantry ranges.

(iii) The small frontage which it occupies makes it valuable in cramped localities, such as salients, villages, roads, or defiles, where it is not possible to deploy a number of rifles (Figs. 36-41). It can also be usefully employed to bring a concentrated enfilade fire to bear on a definite line, such as a hedge, wall, or line of obstacles.

(iv) The power of opening fire at any time

when the gun is once laid is valuable on outpost or for night firing, for the gun can command any required locality for any length of time, and a large volume of accurate fire can be produced and applied at the moment it is required.

(v) The power of turning rapidly in any desired direction, or of "all-round traverse," enables the gun to be brought to bear upon a fresh target without moving the tripod, and with the minimum of movement and exposure. The machine gun can therefore engage quickly an enemy advancing from an unexpected direction without increasing its vulnerability to enfilade fire (Fig. 31). This suits it for employment on a flank, in a detached post, or to support infantry in meeting an enveloping attack.

(vi) The power of accompanying infantry in any nature of country is particularly useful in close country. The mobility of the limbered waggons allows the guns to be used to meet unexpected or critical situations so that they may often be usefully employed as a mobile reserve of fire, when they can be moved unseen.

3. Limitations of Machine Gun.—The usefulness of the machine gun is limited by its characteristics in the following way:

(i) It is difficult to observe its fire accurately at long ranges, and as compared with field guns its ranging power is limited. It cannot therefore be considered as suitable, normally, for use in place of or as an addition to artillery.

(ii) Owing to the concentration of its fire, the expenditure of ammunition is likely to be out of proportion to the results obtained against small or scattered targets such as extended infantry. Unless the range can be ascertained accurately, or the target has considerable depth, effect can only be ensured at ranges of over 1,200 yards by the skilful fire direction of several guns and a heavy expenditure of ammunition.

(iii) Owing to the liability of the mechanism to interruption and the expenditure of ammunition involved, the gun is not suited for sustained fire action.

4. To sum up, machine guns are essentially *weapons of opportunity*. The power of the gun is best used to develop *unexpected bursts of fire against favourable targets*.

Section 7.—The Organization and Tactical Handling of Infantry Machine Guns.

1. Organization.—Machine guns are organized in sections, which form an integral part of the battalions to which they belong. But as circumstances will often make it advisable to employ several sections together, a brigade commander may detach two or more machine gun sections temporarily from their battalions and place them under the brigade machine gun officer, for employment as a unit of the brigade.

2. Employment with Battalions.—(i) When employed by sections with their battalions, machine guns are usually better able to take advantage of fleeting opportunities to support infantry closely, and are more easily concealed, both on the move and in action, than when brigaded.

(ii) On the other hand, a single section of these guns cannot be relied upon to obtain results proportionate to the expenditure of ammunition, when first opening fire, at distances beyond about 1,200 yards. Further, it is rarely

possible to arrange that sections acting independently shall co-operate effectively with each other.

3. Employment with Brigades.—(i) By employing several sections under the control of one commander a brigade commander is able to keep a powerful reserve of fire in hand to be used for any special purpose, the probability of obtaining good effect at ranges beyond 1,200 yards is increased, and it is easier to ensure that the fire is directed on the objective desired by the brigade commander.

(ii) The disadvantages of brigading machine guns are—

(a) That the difficulties of concealment are increased.

(b) That at shorter ranges than 1,000 yards the control of more than one section usually becomes difficult, more especially in attack.

(c) That the positions suitable for a number of sections in attack are often difficult to find at effective and close ranges, and that the combined movement of a number of sections is only possible under such conditions when the ground is very favourable.

4. General Principles of Employment.—(i) It will, therefore, usually depend upon the general situation and upon the ground how many machine guns should be placed under the control of the brigade machine gun officer, and how many should be left with the battalions to which they belong.

(ii) In attack, when the facilities for concealment and control at effective range are good, good results may be obtained by unity of command, and, by a timely concentration of fire, machine guns may be an important factor in the struggle for superiority of fire.

(iii) When control and concealment are difficult, or when the brigade is extended over a wide front, it will usually be better to leave guns with their units.

(iv) It will often be advisable to employ both methods and to leave their own machine guns with the battalions which are first extended, while those of battalions in reserve are placed under the command of the brigade machine gun officer.

5. Employment in Attack.—(i) Machine guns will usually find opportunities for employment in

the attack, in assisting the advance of their infantry by means of covering fire, in protecting attacking infantry against counter-attack or against cavalry, in covering an exposed flank, in assisting the infantry in the fire fight, in preparing for the assault by sudden bursts of fire against the objective of the attack, and in assisting to secure localities seized during the advance.

(ii) After a successful assault, machine guns should reach the captured position as soon as possible in order to pursue the enemy with fire and cover the re-forming of their infantry. In the event of an assault being unsuccessful machine guns should cover the retirement of their own troops, if necessary sacrificing themselves in order to do so.

(iii) Once in action, machine guns should change position as seldom as possible. The difficulties of ranging and of concealment on the move usually outweigh the advantages of decreasing the range.

6. Employment in Defence.—(i) In defence machine guns permanently allotted to the defensive line may lose their mobility, and can rarely be used as a reserve of fire for special pur-

poses, since it is not possible to foresee the action of the enemy when allotting them to their positions. For these reasons it should be exceptional to employ more than a limited number of guns with the firing line in a defensive position.

(ii) It is better to reconnoitre and prepare machine gun positions, and to keep the bulk of the guns out of action and in hand until an opportunity occurs for using them with a reasonable prospect of decisive effect. It is easy to detach guns where required if they are held in hand, but when distributed and in position it is less easy to collect and withdraw them.

(iii) When employed with the firing line in a defensive position, machine guns may be used either dispersed, or brigaded to command approaches, defiles, exits from woods, etc., and to bring fire to bear upon the ground in front of weak parts of the position.

(iv) When retained as part of a local reserve, machine guns retain their mobility, and are therefore available to meet any unexpected situation, or to support local counter-attacks closely.

(v) In order to make full use of the guns, alternate positions should be allotted to sections. These positions should be thoroughly reconnoitred, and all necessary arrangements made for rapid occupation and quick opening of fire.

(vi) These arrangements should include: Previous preparation of cover, information as to the shortest route to the various positions, preparation of range cards, selection of the most suitable position from which to control and observe fire, the most suitable position for the limbered waggons, and arrangements for the supply of ammunition and water.

7. Support and Protection.—(i) Owing to the liability of the mechanism to interruption, the guns of a section should rarely be employed beyond supporting distance of one another. When sections are acting independently and good cover is not available, the guns should usually be not less than 25 yards apart, the average width of the area of ground struck by the bullets of an effective shrapnel.

(ii) Machine guns will usually be sufficiently protected by the dispositions of the troops with

whom they are acting. Should a machine gun commander find himself in an exposed position, he should apply to the nearest infantry commander for a suitable escort if necessary.

8. Control of Fire and Fire Effect.—As a general principle, no more guns should fire than are necessary to meet the tactical requirements, the remainder being placed in concealed positions ready to open fire on a favourable opportunity, or held in positions of readiness under cover according to circumstances. It is, however, of the first importance that sufficient fire effect to attain the object in view should be produced.

9. Orders to Machine Gun Commander.—A machine gun commander should be given definite orders by the commander of the body of troops to which he belongs, as to what is required of him, but he should be allowed as much freedom of action as possible in carrying out these orders, and should be kept informed of all changes and developments of the situation which may affect his action. Initiative and enterprise are essential to the effective handling of machine guns.

10. General Instructions.—(i) When a machine gun is in action only those numbers required to work the gun should be with it. Spare numbers, when not employed as range-takers, ground scouts, ammunition carriers, or on similar duties, should be under cover in the vicinity. Groups of men close to machine guns hinder the working of the gun, are apt to disclose its position, and make a vulnerable target.

(ii) The limbered waggons will be unpacked in positions where they are screened from the enemy's fire and observation.

(iii) The commander of the machine gun section will arrange for the selection of a covered position for his small-arm ammunition cart, as close to his guns as possible.

Section 8.—The Organization and Tactical Handling of Cavalry Machine Guns.

1. Organization and Training.—(i) An officer will be selected in each regiment to command and train the machine gun section, under the orders of the regimental commander. The non-



Fig. 25.—SECTION COMING INTO ACTION OVER EXPOSED GROUND.

It is essential to avoid undue exposure. No. 2 does not come up with the gun until No. 1 has the tripod ready, and No. 3 does not come up with ammunition until the gun is mounted.



Fig. 26.—SECTION COMING INTO ACTION FROM BEHIND NATURAL COVER.

To avoid exposure as far as possible the gun has here been mounted behind cover, and is then brought into position by Nos. 1 and 2.

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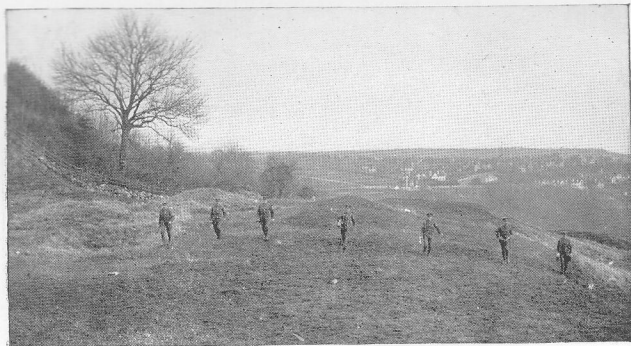


Fig. 27.—SECTION ADVANCING AS PART OF INFANTRY LINE.
Machine gun sections, when the gun and tripod are carried by the gunners as shown in this illustration, may easily be mistaken for an infantry line even at close ranges.

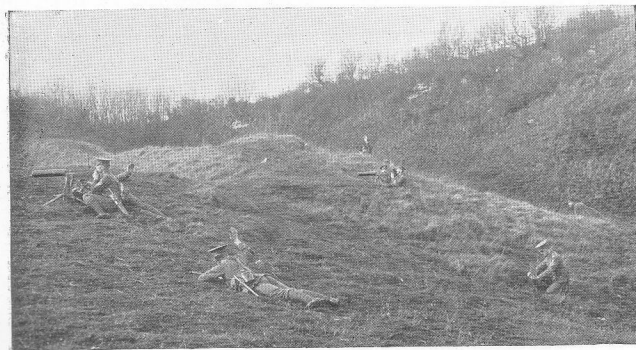


Fig. 28.—MACHINE GUN SECTION IN ACTION.
The section is seen in action. Each gun is ready to fire as shown by the Nos. 2 holding up their hands. As the commander, who is not seen in the illustration, is observing from the right, he is not visible to the Nos. 2. Therefore messages from him are being passed by the connecting file in the foreground. Ammunition carriers are visible to the right, bringing up supplies. When the commander drops his hand fire will be opened. (Sec. 12, para. 1.)

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commissioned officers and privates shown in the war establishment of a machine gun section will be trained as the regimental machine gun section. A reserve section will be trained as opportunities occur (Sec. 1, para. 1).

(ii) As soon as the men have been trained in the duties described in Sec. 1, paras. 5 and 6, the commanding officer will arrange for their tactical training as sections with one or more squadrons which have reached the more advanced stages of squadron training, so that sections may be practised in co-operating with other troops and dealing with situations which would confront them in war.

The elementary training of cavalry machine gun sections will be carried out on the lines laid down in Secs. 2 and 3 (see *Cavalry Training*, Secs. 46-49).

2. Brigading Machine Guns.—(i) When circumstances make it advisable to employ several sections together, a brigade commander may, if he so desires, detach two or more machine gun sections temporarily from their regiments and place them under the brigade machine gun officer for employment as a unit of the brigade.

(ii) **Mounted Action.**—When the machine guns of two or more regiments are required to support a mounted attack, it is necessary to ensure that all the machine gun sections act in close co-operation both with each other and with other portions of the fire attack, in order to ensure that the mounted attack and the fire attack do not interfere with each other (*Cavalry Training*, Sec. 194). For this reason machine guns supporting a mounted attack should usually be brigaded.

(iii) **Dismounted Action.**—For the advantages and disadvantages of brigading machine guns in dismounted action, see Sec. 7, para. 3. Generally speaking, when a considerable force of cavalry is acting dismounted, it will operate on an extended front, and consequently it will generally be preferable to leave the machine gun sections to co-operate with their units. It will often be advisable for a cavalry commander to adopt both methods, and while leaving their machine gun sections with those units which are engaged in the first line, to brigade the sections of those units which he keeps in his own hands. This will give him a mobile and powerful reserve of



Fig. 29.—INFANTRY LINE OCCUPYING A POSITION ON CREST OF RISING GROUND, SUPPORTED BY MACHINE GUN ON A FLANK.

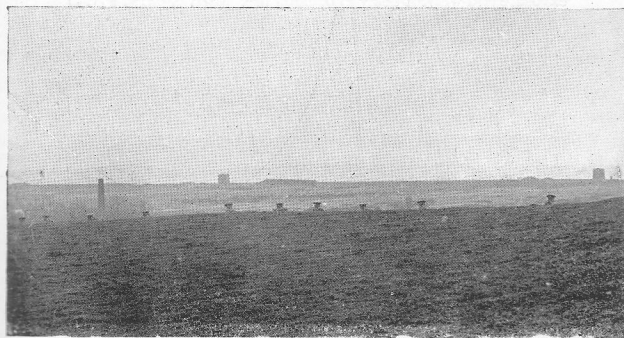


Fig. 30.—INFANTRY LINE OCCUPYING A POSITION ON CREST OF RISING GROUND, SUPPORTED BY MACHINE GUN ON A FLANK.

View of Fig. 29 from enemy's direction, showing how difficult it is to distinguish the machine gun—on the extreme right—from the rest of the line.



Fig. 31.—COMPARATIVE VULNERABILITY OF MACHINE GUN SECTION AND AN INFANTRY LINE.

Infantry line shown in Figs. 29 and 30 changing front to meet flank attack. The line ceases fire and exposes itself to enfilade as well as frontal fire in this operation while the machine gun section meets the flank attack without exposure and without delay in opening fire. (*Sec. 6, para. 2 [v.1.]*)



Fig. 32.—USE OF COVER.

Machine gun section in action on the reverse slope of a small fold of ground. Machine gunners should always utilize cover so as to obtain the full fire effect necessary combined with the best possible protection or concealment.

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fire, which can be employed to meet eventualities.

3. Machine Guns as Cavalry Weapons.—

(i) The characteristics of machine guns which are dealt with in Secs. 5 and 6 render them valuable for employment with cavalry. In co-operation with mounted action, the mobility of the machine gun, and the heavy volume of fire which it can bring from a small frontage render it suitable for supporting a cavalry charge on the principles laid down in *Cavalry Training*, Secs. 194 and 197, while it is well adapted for close co-operation with a dismounted attack.

(ii) Its mobility and fire power render it suitable to meet unexpected or critical situations; hence, when cavalry are acting dismounted, machine guns may often be usefully employed as a mobile reserve of fire. The power of turning rapidly in any desired direction renders the machine gun specially suitable for employment on a flank of the dismounted cavalry.

4. Tactical Handling of Machine Guns in Mounted Action.—(i) When machine guns are employed to support a cavalry charge, the concealment of the guns in the fire position is of

minor importance. The chief object to aim at is to keep the guns hidden until such moment as they can be brought into action suddenly from a position whence the fire of every gun can be concentrated on the enemy just before the moment of impact. To effect this, the machine gun commander must act with promptitude and decision, and clearly understand the cavalry commander's plan of action. In supporting a mounted attack to open fire at the correct time with every available machine gun directed on the main body of the enemy about to be attacked will be the chief consideration.

(ii) The position of the machine guns during the approach march is described in *Cavalry Training*, Sec. 197. The senior machine gun commander should accompany the cavalry commander, and hear the latter's general instructions for the attack. He must then act on his own initiative on the general principles described in *Cavalry Training*, Secs. 220 and 221, for the employment of horse artillery. As the effective range of machine guns is less than that of horse artillery, they will normally be employed in advance, and on the outer flank, of

the latter. The machine gun commander must exercise special care not to mask the fire of the horse artillery.

(iii) A portion of the machine guns may be employed occasionally during a mounted attack as escort to the horse artillery or to the first-line transport (see *Cavalry Training*, Secs. 200 and 224).

5. Tactical Handling of Machine Guns in Dismounted Action.—(i) Machine guns will usually find opportunities for supporting dismounted cavalry in attack, in assisting the advance by means of covering fire; in covering the flanks of the attackers, more especially if positions can be found for them whence they can bring fire to bear on the objective of the attack, and at the same time be available to safeguard the flank if required; and in assisting to secure localities seized during the advance.

(ii) Machine guns should rarely attempt to move forward with dismounted cavalry beyond a certain point. When they have gained a position from which they can give effective support, they should only be moved for good and sufficient reasons. The difficulties of

ranging and of concealment on the move usually outweigh the advantages of decreasing the range.

(iii) When cavalry is acting dismounted in the defence, it may be required—

- (a) To deny a position to the enemy.
- (b) To delay the enemy's advance.

In the first case, where the cavalry will be required to make a resolute stand, the machine guns, being unsuitable for long-sustained action owing to the expenditure of ammunition entailed, should often be kept in hand as a reserve of fire until a favourable target presents itself. When time admits, covered positions approached by covered communications should be arranged. Such positions should be selected with a view to bringing a fire to bear on exposed places which the enemy must cross, or on roads or defiles by which he must advance, especially when he is threatening the flank of the position. The concentrated nature of the fire produced makes accuracy of ranging on such points of great importance.

- (iv) In order to make full use of the guns

alternative positions should be allotted to sections. These positions should be thoroughly reconnoitred, and all necessary arrangements should be made for rapid occupation and quick opening of fire. These arrangements should include previous preparation of cover, information as to the shortest route to the various positions, preparation of range-card, and selection of the most suitable position from which to control and observe fire. In the case where a force of cavalry is required to delay an enemy's advance rather than to hold a position, the machine guns may be more usefully employed in close support of the firing line from the first, instead of as a mobile reserve of fire.

6. General Instructions regarding the Tactical Handling of Machine Guns—(i) **Pursuit.**—In the pursuit the utmost endeavour must be made to turn the enemy's retirement into a rout, and machine guns should be handled with the greatest vigour and boldness, endeavouring to come into action against the enemy's flanks at decisive range.

(ii) **Retirement.**—In retirement close engagements should as a rule be avoided, and machine

guns should be used to delay the enemy by bringing fire to bear on roads, defiles, or open spaces, by which he must advance, and thus forcing him to deploy. They may be especially useful in delaying any effort to turn the flanks of the rearguard.

(iii) **Escort.**—Machine guns will not as a rule require a special escort beyond the provision of a few scouts.

7. Choice of Fire Positions (see Sec. 9).—

(i) In support of cavalry engaged in mounted combat, important considerations for a fire position are that it should afford an extensive field of fire, and be capable of being approached out of sight of the enemy. For this purpose a commanding position will often be the best, but time is of first importance.

(ii) When co-operating with cavalry acting dismounted, a commanding position is usually favourable for the development of covering fire, but otherwise the gun should be sited as low as is compatible with obtaining the necessary field of fire.

8. Reconnaissance of Fire Position (see Sec. 9 para. 1).—(i) The commander, accompanied by

range-takers and orderlies, should usually be well ahead of his guns, so that he can keep in touch with the tactical situation and complete the reconnaissance before the guns arrive.

(ii) Before the commander moves forward to reconnoitre a position, he should give the officer or N.C.O. next in command all the information he can as to the probable fire position, and indicate to him the pace and the initial direction to be followed. If the route to be followed is liable to be mistaken, he must leave men at doubtful points with instructions for the detachment.

(iii) When concealment is of importance, careful mounted reconnaissance should be made to determine the point to which horses may advance without exposure, and careful dismounted reconnaissance to ensure that each gun shall have a clear field of view and a good platform.

9. Advance for Action.—(i) During the advance advantage should be taken of any existing cover to conceal the approach of the guns from the enemy's view. The guns should not be brought on to the actual ground where it is

intended to come into action until the exact position to which the horses may be brought has been selected. There will be little delay in the occupation of the position if the commander has kept well ahead of his guns. The carriage of the gun into the fire position should be carried out secretly and rapidly.

(ii) The commander will select a position for the waggons whence ammunition can be replenished, and where the men and horses will be under cover. This position should not be directly in rear of the guns if it can be avoided.

(iii) When the guns are coming into action to support a mounted attack and time is of the first importance, it will often be impossible to make preliminary reconnaissances, and to take advantage of all cover when coming into action; the guns must in such circumstances be handled with the greatest boldness, and every effort made to deliver an effective fire before the shock takes place.

Section 9.—Choice of Fire Positions.

1. Reconnaissance.—(i) *Surprise and concealment being important factors in the employment of machine guns, their effective use depends largely upon the skill with which they have been brought into action.*

(ii) Reconnaissance is therefore of special importance. The brigade machine gun officer if the guns are brigaded, the section officer if they are not, accompanied by range-takers and orderlies, should usually be well in advance of his guns, where he can observe the action of the body of infantry with which he is co-operating. He should carefully reconnoitre suitable fire positions, and make all preparations for bringing his guns rapidly into action. Alternative positions to which the guns may be moved to meet changes in the situation or to avoid artillery fire should always be selected. Similar reconnaissances should be carried out, whenever possible, before changing position.

2. Tactical Requirements.—(i) *The choice of a fire position must depend upon the tactical requirements of the situation, and upon the object in view.*

For example, it must depend upon whether it is desired to use covering, enfilade, or flanking fire, or to act by surprise.

(ii) In undulating or mountainous country it may be possible to provide covering fire from positions in rear, but in flat country it will rarely be possible to fire over the heads of men in front, and fire positions for machine guns must be sought on the flanks.

3. General Considerations.—Except when affording covering fire from the rear, the gun should be sited as low as is compatible with obtaining the necessary field of fire. A clear field of fire, facilities for observation, a covered approach, concealment and cover for the guns and their detachments, and facilities for ammunition supply, are advantages to be looked for in a good fire position, but one position will rarely unite them all.

4. Concealment.—*As a general principle, when the situation calls for effective fire, fire effect must not be sacrificed to obtain concealment.* In arranging for the concealment of guns, it is important to consider the background. *The neighbourhood of landmarks and the tops of prominent features should be avoided* (Figs. 33 and 40).



Fig. 33.—CHOICE OF POSITION.

View of Fig. 32 from direction of enemy. Photograph taken from a distance of 150 yards. Though the ground is utilized correctly, the position of the gun—which is marked by a cross—is badly chosen, owing to the fact that it is just in front of a large tree, and thus offers a good aiming-mark to the enemy. (Sec. 9, *para.* 4.)

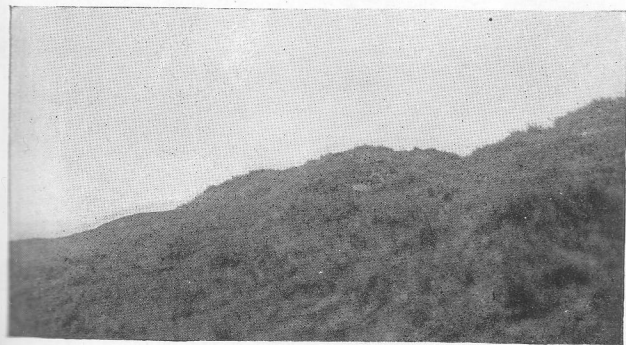


Fig. 34.—CONCEALMENT DUE TO EFFECT OF BACKGROUND.
Machine gun section in action on open ground on hill-side. Photograph taken from 25 yards distance.



Fig 35.—CONCEALMENT DUE TO EFFECT OF BACKGROUND.
 Photograph of the section shown in Fig. 34 taken from a distance of 150 yards.
 Position of section marked by cross.



Fig. 33.—USE OF GUN ON NARROW FRONTAGE.
 This picture illustrates the advantages of a machine gun for use on a narrow frontage when lateral space is limited, as, for instance, to command roads. The gun is also more easily concealed than the number of infantry required to produce a corresponding fire effect.

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Section 10.—General Principles of Fire Control.

1. Opening Fire.—(i) Machine guns should rarely open fire except—

- (a) To facilitate movements of their own infantry.
- (b) To prevent or delay movement of the enemy.
- (c) Against a favourable target.

(ii) Fire should only be opened *when probable results will justify it, and the tactical situation demands it.* When opened, fire should be maintained so long as *there is a reasonable chance of attaining the object for which it was opened.* As soon as a machine gun opens fire its presence may be disclosed; its subsequent appearance will then be watched for, and it loses to a great extent the advantage of surprise. *Fire should, therefore, not be opened without good reason.*

2. Method and Volume of Fire.—The method and volume of fire must be determined by the tactical situation, the object in view, the nature of the target, the nature of the ground, and the

characteristics of the gun. If good results are to be obtained, fire must be skilfully controlled and directed by machine gun commanders.

3. Effect of Fire at Different Ranges.—Fire should not be opened at ranges beyond 1,200 yards unless a particularly favourable target offers, or a number of guns can be employed. Between 1,200 and 800 yards good effect may be anticipated from machine gun fire, and within 800 yards the greatest possible effect should be developed. If the firer can himself obtain observation, the effect of machine gun fire is appreciably increased.

4. Ineffective Fire.—If there is no satisfactory indication of effect, and no special justification for firing at long range exists, it will usually be better to withdraw from action and to seek other opportunities for effective intervention.

5. Choice of Targets.—(i) The general considerations which govern the selection of a target for machine guns are its *tactical importance*, its *range*, and its *vulnerability*. Except under special circumstances—as, for example, when the tactical situation demands the opening of fire irrespective of the probability of obtaining



Fig. 37.—USE OF GUN ON NARROW FRONTAGE.

This picture shows the machine gun in a position which enables it to command two roads. It is concealed by the natural cover on the roadside in the foreground to the right



Fig. 38.—USE OF GUN ON NARROW FRONTAGE.

Near view of machine gun commanding road, concealed with the aid of natural cover.



Fig. 39.—USE OF GUN ON NARROW FRONTAGE

View of Fig. 38 from the direction of enemy

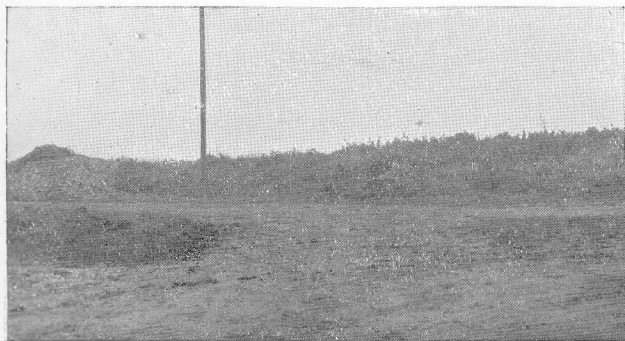


Fig. 40.—CHOICE OF POSITION.

View from direction of enemy, showing that the position in Figs. 38 and 39, which is otherwise good, is badly chosen owing to its proximity to a telegraph post, which offers a good aiming mark to the enemy's fire

material results in hits—machine guns should open fire only upon targets which are sufficiently large and dense to promise an adequate return for the ammunition expended. Thin lines of infantry in extended order are not a suitable target.

(ii) **Artillery.**—Machine guns should seldom engage artillery with direct fire beyond close rifle range, for in such circumstances superiority of fire will always rest with the artillery if the machine guns are located. Within close rifle range machine guns, if concealed, should inflict considerable loss on artillery.

6. Fire Orders.—(i) When two or more sections are brigaded they will act as a unit under the command of the brigade machine gun officer, who, if the conditions are favourable—*i.e.*, if the sections can be brought into action in such a way that his orders can be heard clearly by all concerned—will direct the fire as regards range, point of aim, method of fire, and the opening and cessation of fire.

(ii) It will, however, seldom be possible for a brigade machine gun officer to make his voice heard by more than one section of guns, and

the orders for fire direction will usually be limited to indicating the objective by signal or message, and to ordering the opening and cessation of fire, all other details being left to the section officers. *Thorough training in semaphore and in the correct passing of orders is essential.*

Section 11.—Methods of Fire.

1. The principal methods of fire are—

- (i) Ranging fire.
- (ii) Rapid fire.
- (iii) Traversing fire.

2. **Ranging Fire.**—In *ranging fire*, groups of from ten to twenty rounds are used to obtain observation. When the conditions for observation are favourable, a group of ten rounds should be sufficient. Under less favourable conditions, groups of as many as twenty rounds may be necessary, but if observation is not then obtained it is unlikely to be obtained with larger groups. Single deliberate shots are of no value for ranging. *Ranging fire should never be used when surprise is of importance.*

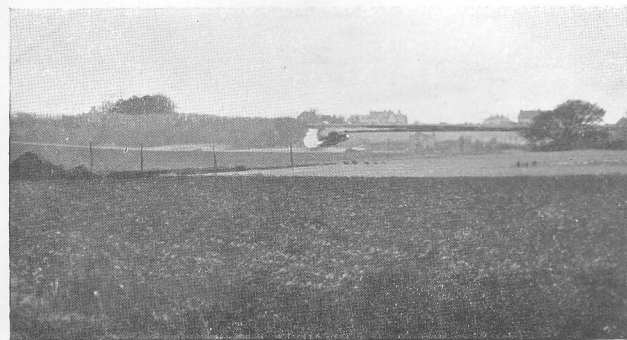


Fig. 41.—VISIBILITY.

This picture shows the difficulty of locating a machine gun section in a well chosen position. The position of the section is here indicated by a small white dot (a white flag), a little to the right of the white strip of road in the centre, which the gun commands.

3. Rapid Fire.—*Rapid fire* is used when the greatest volume of fire is required. It is produced and applied by means of a series of long groups of from thirty to fifty rounds. The firer pauses momentarily between each group to ensure that the sights are correctly aligned, and continues until ordered to cease fire or until he considers it necessary to do so. Rapid fire will be used (1) when the sighting elevation has been successfully obtained by ranging fire; (2) when surprise effect is required; (3) with combined sights.

4. Traversing Fire.—This method is employed against a linear target, and is applied by means of a series of small groups with the object of covering as wide a front as possible with only sufficient volume to ensure effect. In this case a group should consist of from five to ten rounds only, because against a linear target greater volume will not produce greater effect (see also Sec. 3, para. 10). Traversing may be either horizontal or diagonal.

5. Combined Sights.—(i) When two or more guns are working together, the depth of the effective zone can be increased by ordering

different elevations to be used by each gun, while each uses the same aiming mark. By this means, while the effective zone is increased, the density of fire is considerably reduced. The difference of elevation used depends chiefly on the number of guns available.

(ii) For general guidance, when one section only is available, combined sights differing by 100 yards should be used at and beyond 800 yards, and up to 1,200 yards inclusive. Beyond 1,200 yards the difference in sighting should not exceed 50 yards between guns. With two or more sections the difference of sighting between guns should not exceed 50 yards. When both guns of a section are sighted to the same elevation, "combined sights by sections," differing by 100 yards, may be used. *Combined sights should at once be discontinued if accurate observation of the strike of bullets can be obtained.*

(iii) Machine gun commanders, when ordering combined sights, will give out the *lowest range* and the difference in sighting to be used. The lowest range will always be taken by the left-hand gun of the section or sections as the case may be. The No. 1 of that gun will pass to the

No. 1 of the gun on his right the range he himself is using and the difference ordered, and so on down the line.

(iv) **Mark VII Ammunition.**—The depth of the effective zones with Mar VII ammunition may be taken as being—

Range (yards).		Depth of Zone (yards).	
500	.. ..	220	
600	.. ..	204	
700	.. ..	188	
800	.. ..	172	
1,000	.. ..	140	
1,200	.. ..	112	
1,500	.. ..	70	

From this it is apparent that, allowing for an error of 10 per cent. in ascertaining the range, the flatness of trajectory within 800 yards will ensure the target being included in the effective zone. Therefore, with Mark VII ammunition, combined sights should not be used within 800 yards.

(v) For general guidance, when using Mark VII ammunition, combined sights differing by 100 yards should be used at and beyond 800 yards and up to 1,200 yards inclusive, except that, allowing for a 5 per cent. error when ranging with instruments at 1,200 yards,

50 yards difference between guns can be used; beyond 1,200 yards the difference in sighting should not exceed 50 yards between guns. Under certain conditions, a machine gun commander should use his judgment in modifying the application of this principle in accordance with the facilities that may be available for accurate ranging—*e.g.*, reliability of range-finder, efficiency of range-taker, and weather conditions.

(vi) **Elevation when Sections are Brigaded.**—Another question which should be left to the judgment of the machine gun commander occurs when sections are brigaded. In such a case differences of elevation may be given either to each gun or to each section. This will depend on the tactical situation. For example, if three sections are co-operating, and the commander judges that ranging can be relied upon to give an error not exceeding 10 per cent., and the range is given as 1,200 yards, he could either order each section to use the same elevation and the difference between sections to be 100 yards, or he could order three guns each to take an elevation differing by 100 yards. The former would be used against a very favourable target which required a large volume of fire; the

latter, when the volume produced by three guns would meet the tactical requirements, in which case one section and one gun would be held in reserve.

(vii) TABLE SHOWING THE EFFECT OF COMBINED SIGHTS AND ILLUSTRATING THE ECONOMY OF FIRE AS ACCURACY IN RANGING INCREASES (MARK VII AMMUNITION).

Range (Yards).	Depth of Effective Zone (Yards).	Error in Ranging (per Cent.).	Consequent Depth to be searched (in Yards).	Using Combined Sights.			
				Minimum No. of Guns required.	Difference in Sighting Elevation (in Yards).	Depth searched (in Yards).	Distance over which Cones overlap.
1,000	140	5	100	Combined	sights	not	
		10	200	2	100	240	40
		15	300	3	100	340	40
1,200	112	5	120	2	100	212	12
		10	240	2	50	162	62
		15	360	3	100	312	12
1,500	70	5	150	3	50	170	20
		10	300	6	50	320	20
		15	450	8*	50	420	20

* NOTE.—In this case the depth searched is slightly less than the depth required to be searched, but is the best which can be done with eight guns.

(viii) If the directing officer wishes to alter elevation after opening fire, he orders the left gun "up" or right gun "down"—*e.g.*, two guns firing 1,025 to 975 yards; to increase elevation by 50 yards, he orders left gun (975) "up 100."

6. Observation of Fire.—(i) When the target to be engaged is a narrow one, and all guns are using the same aiming mark, it will generally be impossible for the firers to observe their own particular cone of fire. In these circumstances no alteration in sighting is permissible except under the orders of the machine gun commander.

(ii) In other circumstances—*i.e.*, when the guns are laid on different points of aim—each firer should endeavour to correct his elevation from observation of the bullet strike. In such cases the effect may be increased by traversing from the flanks inwards, or from the centre outwards.

7. Alteration of Sighting.—(i) If, as a result of his observations or for other reasons, the machine gun commander wishes to alter the sighting, the quickest method is to bring the elevation of the left-hand gun above that of the right-hand gun, or to lower the elevation of

the right-hand gun below that of the left-hand gun, according as to whether he wishes to increase or decrease the elevation.

(ii) If the machine gun commander is directing the fire from the opposite flank to that of the gun or guns the elevation of which he wishes to alter, it will be necessary to cease firing momentarily for his order to be received, after which he will immediately give the signal to continue. This will often not be necessary when he is on the same flank.

8. Vertical Searching.—(i) To overcome errors in estimating range with a single gun, it is necessary to vary the aim within the limits of the possible error. An easy and methodical method for doing this, known as vertical searching, is taught in Practice IV of Table C, Part I (p. 99), which lays down the principles underlying this form of the application of fire. This method will cause fire to search a deep area of ground over which it is desired to distribute the fire in depth.

(ii) Vertical searching is useful when one gun is available to engage targets in enfilade, or whenever the target is of greater depth than

the beaten zone of a cone of fire—as, for instance, in the case of narrow-fronted columns. In vertical searching it requires much skill on the part of the gunners to avoid gaps between the shot groups, and to regulate the volume of fire according to the density of the target engaged. Alterations to elevation in this method of firing are made by turning the elevating wheel, and not by the tangent sight.

9. Night Firing.—(i) Night firing may be employed with advantage when the gun can be placed in position by day to command a defile, obstacle, etc. An auxiliary point of aim is required, and this is supplied by means of a lantern placed about 10 yards in front of the gun. The lantern should be enclosed in a night firing box provided with suitable airholes. The box should be of the dimensions given in the note to Fig. 42. Its face should be covered with tracing linen or other transparent material, marked as shown in Fig. 42. When the gun has been laid as required, by day, the slide on the tangent sight should be moved so that the line of sight passes through the intersection of the lines B and E on the lantern. The greatest

care is necessary to ensure that the elevation of the gun is not altered, and that the position of the lantern is not even slightly changed when it is lighted after dark.

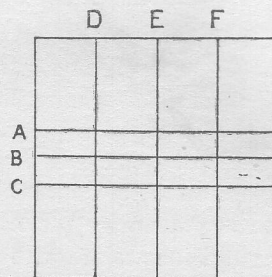


Fig. 42.—NIGHT FIRING BOX.

Distance between bands E D and E F, each $2\frac{1}{2}$ inches. Distance between bands B A and B C, each 1 inch from centre to centre. Each band should be $\frac{1}{2}$ inch wide. Face of box, 10 inches square.

(ii) **Searching.**—Searching is carried out by varying aim between the lines A and C, which give an angle of 10 minutes at 10 yards. Deflection can be ordered between lines D and F; $2\frac{1}{2}$ inches at 10 yards gives 2 feet deflection per 100 yards of range.

(iii) When the gun cannot be placed in position by day, the following method can some-

times be used if an Abney level is available. An observer plants a peg (*a*) in the ground, and crawls back about 25 yards to a point at which he sees peg (*a*) in line with the target. He marks this point by means of a peg (*b*), and notes the angle of sight to the target and the range. The angle of elevation for the range is added to the angle of sight forming the quadrant angle. At night the tripod is placed over peg (*b*), and the night firing box over peg (*a*). The gun is then aligned on the box, and the quadrant angle elevation is put on by the Abney level. The tangent sight is then raised without moving the gun till an auxiliary line of sight is obtained on to the box. The gun is now ready to fire. If the correct elevation or direction is lost by the mounting working into the ground, it can be corrected by re-aligning the auxiliary line of sight on the box by means of the elevating gear. This method is sufficiently accurate to give a good percentage of hits on a target 10 feet wide at 800 yards. Searching should be carried out as previously described to overcome errors in estimation of range, as no observation can be obtained at night.

Section 12.—Signals for Control and Observation of Fire.

1. Signals for Controlling Fire.—On all occasions when guns are firing, the following signals should be used in controlling fire:

Command.	Signal.	By whom given.
Action ..	Both arms, fully extended, raised from the sides to a position in line with the shoulders, and lowered again. This motion to be repeated until it is seen that the signal is being complied with	Controlling officer.
Out of Action	Arms swung in a circular motion in front of the body	Controlling officer.
Gun ready to Fire (Fig. 28)	Hand up	No. 2.
Preparatory to opening fire	Hand up	Controlling officer.
Open fire ..	Hand dropped	Controlling officer.
Cease fire ..	Elbow close to the side, forearm waved horizontally	Controlling officer.

2. Signals for Results of Observation of Fire.—

(i) In many cases observation will be impossible from the gun position, and it will be necessary for observers to signal results from a flank. The following semaphore code is used in signalling the results of observation of fire:

P = Plus : meaning fire observed at least 50 yards beyond target.

M = Minus : meaning fire observed at least 50 yards short of target.

T = Right : meaning fire observed to right of target.

L = Left : meaning fire observed to left of target.

C = Centre : meaning direction of fire correct.

U = Unobserved : meaning no observation obtained.

Q = Query : meaning fire observed, but its position uncertain.

R = Range : meaning range correct.

(ii) The signaller at the observation post should give the "call up" to show that the observers are ready. "P" and "M" may be



Fig. 43.—FIRING FROM CONSTRUCTED COVER.
Machine gun section in action in circular entrenchment.



Fig. 44.—FIRING FROM CONSTRUCTED COVER.
View of Fig. 43 from direction of enemy, showing that Nos. 2 and 3 are completely concealed.

repeated for multiples of 50 yards; thus "P P" would mean "fire observed at least 100 yards beyond target." Signals should be repeated from the gun position if this can be done without disclosing the position to the enemy.

3. Other signals as in Sec. 94 of *Infantry Training*, and Sec. 7 *Drill and Field Training* of this series.



Fig. 45.—FIRING FROM CONSTRUCTED COVER.
Machine gun section in action in emplacement



Fig. 46.—FIRING FROM CONSTRUCTED COVER.
View of Fig. 45 from direction of enemy.

To face p. 75.

CHAPTER IV ELEMENTARY TRAINING

Section 13.—General Information.

1. Depth of Effective Zone.—The depth of the zone beaten by 75 per cent. of shots fired from a Maxim gun, measured as described in para. 181, *Musketry Regulations*, and Sec. 12, para. 7, *Musketry*, of this series, may be taken as 150, 70, 60, and 50 yards respectively at 500, 1,000, 1,500, and 2,000 yards, and the lateral dispersion of the cone of fire at the same ranges as 4, 8, 13, and 19 feet.

2. Table of Wind Allowances.—The following data will serve as guides in assisting machine gun commanders to make the necessary allowance for wind when giving fire orders:

(i) **Mark VI Ammunition**—*Right-Angle Winds*.

Range (Yards).	Allowances for—					
	Mild.		Fresh.		Strong.	
	Yards.	Feet.	Yards.	Feet.	Yards.	Feet.
500 ..	—	2	—	4	—	6
1,000 ..	3	—	6	—	9	—
1,500 ..	6	—	12	—	18	—
2,000 ..	12	—	24	—	36	—

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Oblique Winds.—Halve the allowance for right-angle winds beyond 500 yards range.

Head and Rear Winds.—Ignore within 1,000 yards; between 1,000 yards and 1,500 yards allow 50 yards.

(ii) **Mark VII Ammunition.**—When the wind is from the right the above data apply; when the wind is from the left half the above allowances. This is accounted for by the marked influence of drift with Mark VII ammunition.

3. Range Tables—

MAXIM-GUN RANGE-TABLE FOR MARKS VI AND VII
AMMUNITION.

Range (Yards).	Angle of Tangent Elevation on the Gun.					
	Mark VI.				Mark VII.	
	Gun Maxim "303".		Guns Maxim "303" converted Mks. I and II.		Guns Maxim "303" and converted Mks. I and II.	
	°	'	°	'	°	'
100	0	10.5	0	10.0	0	12.5
200	0	14.5	0	15.0	0	15.0
300	0	21.0	0	20.5	0	18.5
400	0	27.0	0	26.5	0	22.5
500	0	35.0	0	34.0	0	27.0
600	0	44.0	0	43.0	0	32.5

Range (Yards).			Angle of Tangent Elevation on the Gun.			
			Mark VI.		Mark VII.	
			Gun Maxim '303".	Guns Maxim '303" converted Mks. I and II.	Guns Maxim '303" and converted Mks. I and II.	
700	..	..	0 56.5	0 55.0	0 38.5	
800	..	..	1 10.0	1 7.5	0 46.0	
900	..	..	1 23.0	1 19.5	0 54.0	
1,000	..	..	1 38.0	1 33.5	1 3.5	
1,100	..	..	1 53.5	1 48.5	1 14.5	
1,200	..	..	2 11.0	2 6.0	1 27.0	
1,300	..	..	2 28.5	2 22.5	1 41.0	
1,400	..	..	2 49.5	2 43.5	1 57.0	
1,500	..	..	3 9.0	3 2.0	2 15.0	
1,600	..	..	3 30.0	3 22.5	2 35.0	
1,700	..	..	3 55.0	3 45.5	2 58.0	
1,800	..	..	4 22.0	4 11.5	3 23.5	
1,900	..	..	4 50.0	4 38.5	3 52.0	
2,000	..	..	5 20.5	5 8.0	4 24.0	
2,100	..	..	5 53.0	5 35.5	5 0.5	
2,200	..	..	6 29.5	6 6.5	5 41.0	
2,300	..	..	7 11.0	6 42.0	6 26.0	
2,400	..	..	7 57.0	7 19.0	7 17.0	
2,500	..	..	8 46.5	8 0.0	8 14.0	
2,600	..	..	9 39.0		9 18.0	
2,700	..	..	10 37.0		10 30.0	
2,800	..	..	11 37.0		11 50.5	
2,900	..	..	12 41.0			

NOTES.—(a) Heights of trajectory and angles of descent may be taken as being the same as for the S.M.L.E. Mark III rifle.

(b) Converted guns are not sighted for ranges beyond 2,500 yards.

Section 14.—Tests of Elementary Training.

1. General Rules.—No man should begin firing with service ammunition until he has correctly passed the tests of elementary training. The following tests of elementary training have been devised to assist officers in testing the efficiency of their sections in elementary training, and also to ensure that no detail of such training is overlooked. It is important that these tests should not be considered as competitions against time, for although quickness is necessary, yet accuracy is the first essential. No man should therefore be passed as efficient unless all the points are properly fulfilled, even though he may complete them in the standard time.

2. The tests must be carried out in strict accordance with the detailed instructions given, for unless the smallest details are insisted upon, the time limit will not be applicable. In carrying out these tests, time can be saved if the first pair complete Tests 1 to 5 consecutively; the remainder can be carried out as convenient.

3. The entire personnel of a machine gun

section, including, when possible, the drivers, should qualify in these tests, acting both as No. 1 and No. 2. This is necessary, for on service any member of a section may be required to replace a casualty at a moment's notice. In all tests, No. 1 will repeat all orders received.

Test 1. To erect the tripod and mount the gun on the command *Mount gun*.

The tripod, gun, and ammunition box, to be laid on the ground with Nos. 1 and 2 standing one on each side of them. The clamps of the tripod legs to be sufficiently tight to prevent them from falling loose when lifted; they must be close enough together to enable the tripod to be put into the hood; the strap to be buckled round the rear leg; traversing clamp tight. The position where the gun is to be mounted to be not more than five yards away.

Points to be Observed.—Crosshead to be upright; all clamps tight; pins home and turned down; both elevating screws exposed the same distance; gun pointing to the front; cork plug withdrawn; Nos. 1 and 2, and an ammunition box, to be in position; tripod adjusted so that the gun is at a suitable height for No. 1 to lay

and fire in a comfortable position without constraint. Standard time, 20 seconds.

Test 2. To load the gun on the command *Load*.

In continuation of Test 1: Belt, with a few dummy rounds at the end, properly packed in the box, which will be closed and fastened.

Points to be Observed.—All loading motions to be quite distinct and correct; to be carried out without any slurring. Standard time, 5 seconds.

Test 3. To adjust the sights and lay the gun on the completion of the command *At (range)*—*At (target)*.

In continuation of Test 2: Gun loaded and ready to lay. Three objects will first be pointed out on a landscape target placed about 25 yards from the gun, but the No. 1 being tested will not know which will be given. Any range may be ordered so long as it will not be necessary to alter the slide by more than 500 yards up or down when the aiming mark is changed.

Points to be Observed.—That the slide is adjusted and the gun laid with absolute accuracy. When checking the aim, "holding" pressure must be exerted on the handles; this may generally be done most conveniently by the instructor,

but, should there be any question of different "holding," the No. 1 should hold the gun while the instructor checks the aim. No. 1 must be careful, however, that he does not exert lateral pressure when leaning to one side to clear the sights. Standard time, 12 seconds, from the range being ordered until No. 2 holds up his hand, indicating that No. 1 is ready to open fire.

Test 4. To unload the gun on the command *Unload.*

In continuation of *Test 3.*

Points to be Observed.—Tangent sight lowered, but without moving the slide; unloading motions to be quite distinct, without slurring; belt withdrawn, repacked correctly in the box with lid closed and fastened; lockspring released. *Standard time*, 5 seconds.

Test 5. To dismount the gun on the command *Dis-mount gun.*

In continuation of *Test 4*: The gun will be dismounted and, together with the tripod and ammunition box, will be placed in the same position as at the beginning of *Test 1*.

Points to be Observed.—All the points as at the beginning of *Test 1*, and the cork plug replaced. *Standard time*, 15 seconds.

Test 6. To bring the gun into action on the command *Action—Range—target, e.g., Action—400—fir-tree.*

This test combines *Nos. 1 to 3*. It emphasizes the necessity for proficiency in all details required before a gun can open fire with effect. This test should therefore not be applied until proficiency has been attained in each of those that precede it. The numbers, gun, tripod, and ammunition box will be as at the beginning of *Test 1*.

Points to be Observed.—All points as laid down for *Tests 1, 2, and 3* to be fulfilled. When No. 1 is ready to open fire, No. 2 will hold up his hand. *Standard time*, 40 seconds, from the range being ordered until No. 2 holds up his hand.

Test 7. Horizontal traversing.* *On the command* *Limits of traverse (objects).—Traversing fire.*

The target will be a horizontal line of figures, khaki on green, 3 inches high and 4 inches apart from centre to centre, placed at 25 yards from

* Horizontal and diagonal traversing practices at short ranges may, at the discretion of instructors, be carried out by a steady movement of the gun with continuous fire, as well as by the group traversing and automatic tap.

the gun. The gun will be laid on any figure that may be ordered, sights set at 500 yards. The test will comprise traversing from *right* to *left* as well as from *left* to *right*. On the command *Traversing fire*, No. 1 will fire a group at the figure named, then traverse, so that the next group will be fired at the interval to the next figure; the subsequent groups will be fired at a figure and a space alternately.

Each time a group is fired, pressure will be maintained on the double button for approximately one second, which is about the time required to fire a group of five to ten rounds. The test will not be completed until the space included between five figures, including the first-named and the fourth from it has been traversed. In order to ensure that the traversing is satisfactory throughout, the order to cease fire will be given at least once during the traverse, but not before five groups have been fired, and the laying will be checked; this will be repeated when the limit of the traverse is reached.

Points to be Observed.—That the traversing clamp is just sufficiently loose to enable the gun to be

deflected by a sharp tap with the hand on a rear cross-piece; when checking the laying, that the sights are laid approximately correctly; the object is to test the traversing by ascertaining if the strength of tap has been correctly estimated, and not accurate re-laying; tapping backwards to obtain accuracy or aim will not be allowed. By counting the number of groups fired, the point of aim can be calculated—*e.g.*, fire opened on the first figure and stopped after the seventh group has been fired; the gun should then be laid on the fourth figure. *Standard time*, 3 seconds for each complete series—*i.e.*, a group and a completed traverse; *e.g.*, in the example above the time taken should have been 19 seconds—*i.e.*, 6 complete series = 18 seconds; and a group = 1 second; total = 19 seconds.

Test 8. Diagonal traversing. On the command *Limits of Traverse (object) Traversing fire*.

The target will be three lines of three figures, as for *Test 7*, each joined at an angle of 120 degrees to the next.

The procedure will be as for *Test 7*, but in this test correct manipulation of the elevating wheel

is included. Traversing will be from *right* to *left* as well as from *left* to *right*.

Points to be Observed.—As in *Test 7*. *Standard time*, 4 seconds for each complete series, as explained in *Test 7*.

Test 9. Rectifying stoppages.

The instructor will indicate the stoppage required by adjusting the crank handle of a spare gun, if available, or by holding a stick against a wall or target to exemplify the position of the crank handle which he wishes to illustrate. For example: Crank handle vertical; immediate action. The other positions of the crank handle can be similarly exemplified.

As an elementary test, only the "immediate action" (see Table of Stoppages, Machine-Gun Handbooks) will be required, but as proficiency increases the remedy of stoppages may be more fully tested by introducing variations in accordance with the tabulated list of stoppages, "Remedy in Detail"; e.g., after the "immediate action" in above example has been applied, keep the crank handle in the same position, telling No. 1 at the same time "Gun still

stops." No. 1 should lighten the fuzee spring or put on the muzzle attachment. In all cases the "immediate action" must first be applied.

Points to be Observed.—That the correct remedy is applied and completed; that all motions are correctly and clearly carried out; that the gun is relaid correctly after a remedy has been completed. *Standard Time.*—The correct procedure to be begun within 3 seconds of the order "Gun stops" from the instructor.

Test 10. Belt filling.

(a) A heap of twenty-five rounds of ball ammunition to be placed beside a man; these to be inserted in a belt. *Standard time*, 1 minute.

(b) As for (a), but 250 rounds to be inserted in a belt by one man. *Standard time*, 12 minutes.

Points to be Observed.—Rounds to be placed anyhow in a heap, and not arranged. Inspection of the belt on completion will show if it has been filled so as not to cause a fault in feed.

TESTS OF ELEM

[illegible]

ENTARY TRAINING.

[illegible]

CHAPTER V

MACHINE GUN COURSE *

Section 15.—General Information.

1. (i) Since the consistency of the ground, the condition of the barrel, and the play of the mounting affect in a greater or less degree the dispersion of the bullet cone, it is necessary that a firer should be well acquainted with the peculiarities of the gun and mounting.

(ii) In order to teach the use of the muzzle attachment (see *Handbook for the Maxim Gun*), fifty rounds should be fired annually with the attachment adjusted. The Vickers gun is always fired with the muzzle attachment.

(iii) It is important that all the points to be observed before, during, and after firing are carefully carried out, in order to render them habitual to all machine gunners.

(iv) The section officer will fire Part I, also Practices 7 and 8, as well as the classification

* The new General Machine Gun Course, to be substituted for all Machine Gun Courses previously authorized, will be found on pp. 117-123. Particulars in regard to classification of Gunners and Allotment of Ammunition will also be found in these pages.

practices of Part II. Non-commissioned officers will fire all practices of both parts.

(v) Table "C" is divided into Parts I, II, and III.

2. (i) **Part I** is instructional, and since it is probably the first time a new machine gunner fires with service ammunition, careful and thorough instruction is necessary throughout the practices. The trained gunner must also regard these practices as instructional. The best value will be obtained by criticizing each practice while it is in progress, ceasing fire for the purpose, rather than by waiting until it is completed, when more ammunition will probably not be available with which to correct faults.

(ii) In these practices the firer learns, as he gains experience, to understand thoroughly the peculiarities of his gun and its mounting, and to compensate for them by suitable holding. These points can seldom be learnt without careful instruction and explanation by the section officer. In the traversing practices of Part I no tapping backwards to correct faulty traversing will be allowed. In these practices

a space exceeding 2 inches without a bullet mark indicates faulty traversing.

(iii) **General Instructions.**—The sighting elevation to be used for the instructional machine gun target is 800 yards. Aim to be on or in line with the feet of a figure should cause the bullets to strike in the centre of the band vertically above. Guns should, however, be harmonized before firing. As the accuracy of the first shot of each group fired by a machine gun is not reliable, a wide shot will generally be found when examining a group. Instructors should bear this in mind when criticizing the results of a practice or measuring the size of a group. In single shot traversing, therefore, the elevation may differ slightly from that required when firing groups.

(iv) **Repetition of Practices.**—Practices of Part I may be repeated as considered necessary by the section officer, provided that the rounds allotted to Parts I and III are not exceeded.

3. Part II.—(i) In the classification practices (9, 10, 11, 12) of Part II, fire will be stopped as soon as the time limit is reached. No allowance will be made in these practices for stoppages which are due to causes other than defects of the mechanism or breakages. The firer will

be given time to look over the gun and the ammunition belt before each practice is begun.

(ii) **Stoppages.**—Should the stoppage be due to a defect in the mechanism or to a breakage, sufficient time to remedy such stoppage will be allowed, or the practice will be repeated.

(iii) **Points in Classification Practices.**—Points will be allotted in the classification practices (9, 10, 11, 12) as follows:

Practice 9.				Points.
75 per cent. of hits and over ..	..	..	..	35
60 " " and less than 75 per cent.	75	per cent.		30
45 " " " " 60 " "	60	" "		25
30 " " " " 45 " "	45	" "		15
15 " " " " 30 " "	30	" "		5
	Less than 15	" "		0

Practice 11.				Points.
50 per cent. of hits and over ..	..	..	..	35
40 " " and less than 50 per cent.	50	per cent.		30
30 " " " " 40 " "	40	" "		25
20 " " " " 30 " "	30	" "		15
10 " " " " 20 " "	20	" "		5
	Less than 10	" "		0

Practice 10.		Practice 12.	
Points.		Points.	
No spaces ..	45	..	65
Not exceeding 2 spaces ..	40	..	60
" " 4 " " ..	30	..	50
" " 6 " " ..	15	..	35
" " 8 " " ..	5	..	20
" " 10 " " (exceeding 8 spaces = 0)	..	..	5
Exceeding 10 " " ..	..	..	0

(iv) **Special Instructions.**—In Practices 10 and 12 the target should be divided into rectangles by means of invisible vertical lines 1 foot 6 inches apart. A space means any rectangle which does not contain a bullet mark. A hit on a dividing line to count as most favourable to the firer, but will only count in one rectangle.

(v) **Classification of Gunners.**—In order to be classified as a *First Class Gunner*, 100 points must be obtained in the classification practices.

In order to be classified as a *Qualified Gunner*, 50 points must be obtained in the classification practices.

Those who obtain less than 50 points will be classified as *Inefficient*, and should generally be replaced in the Machine Gun Section.

4. Part III.—The ammunition allotted to this part will be at the disposal of the section officer, and may be expended as he considers most beneficial for the efficiency of his machine gun section. No record of these rounds, other than the entry in the ammunition book, except such as are expended for extra practice of bad shots, need be kept, nor should any statement of expenditure be required.

5. Field Practices—Part IV.—Tactical exercises, or problems in accordance with the principles laid down for field practices fired with the rifle, should be carried out.* Most of these practices should be carried out between ranges of 600 and 1,200 yards.

6. Allotment of Ammunition.—

	Rounds.
Part I. Each officer, non-commissioned officer and man	170
Part II. Each non-commissioned officer and man	550
Section officer	350
Part III. (See para. 4 above)	265
To the Commanding Officer for expenditure as he may consider advisable, such as training of drivers and horse-holders (cavalry), field practices, tests of machine guns or personnel, experimental firing, demonstrations	1,900
Training of Reserve section, Part I.	2,500
To the Brigadier, for each section of the Brigade, to be expended at his discretion	2,235
Total per section	17,500

Note.—Ammunition allotted to machine gun sections is not to be expended for rifle firing.

* Sec. 66 of *Musketry* of this series contains the conditions of a number of field practices which can be fired on classification ranges. See also Secs. 54 and 65 of the above book, which also includes field practices which can be fired on 30 yards and miniature ranges.

Section 16.—Table C.

MACHINE GUN COURSE (ANNUAL).

CAVALRY AND INFANTRY—REGULAR ARMY.

Part I.—Instructional.

To be fired at a range of 25 yards. Target—*Instructional Machine Gun Target*—Plate 35, *Musketry Regulations*, Part II, and Figs. 47 and 48.

No.	Nature of Practice.	Rounds.	Method of Conducting and Object of Practice.
1	Grouping	6	To teach the importance of the correct holding required for the gun, which should group in a 3-inch ring.
2	Single shot Traversing	7	To teach automatic tapping. Four figures to be indicated by the instructor. Gun to be laid on the flank figure indicated by the instructor; fire a shot and tap alternately as in Section Drill (Traversing Fire). Shots should be approximately 2 inches apart. The result of each shot should be criticized. Single shot loading.

TABLE C—Continued.

No.	Nature of Practice.	Rounds.	Method of Conducting and Object of Practice.
3	Application	12 (6 to each group)	To teach correct laying and holding. Two alternate figures to be indicated by the instructor. A group to be applied to the rectangle above each figure. The point of mean impact of each group should be within the rectangle above each figure respectively.
4	Vertical Searching	20	To teach automatic manipulation of the elevating wheel. Single shot loading. The gun to be laid on a figure with sights adjusted to 800 yards. Without altering the elevation of the gun, adjust the sights to 1,250 yards. Fire a shot, then elevate and fire, and continue elevating and firing alternately until the sights are again aligned on the original aiming-mark. Each shot should be approximately 2 inches vertically above the last, and the thin brown band should be reached. Then traverse

TABLE C—Continued.

No.	Nature of Practice.	Rounds.	Method of Conducting and Object of Practice.
			about 2 inches inwards, and, without altering the elevation of the gun, adjust the sights to 800 yards and proceed as before, but depressing after each shot instead of elevating. When the sights are aligned between the figure originally laid upon and the next, the practice is completed, and each shot should be approximately 2 inches vertically below the last. The vertical interval of 2 inches at 25 yards is the horizontal equivalent to 60 yards at 1,000 yards range, or about the depth of the effective zone for the range.
5	Traversing	50	Having learned to know the holding required for the gun in Practices 1 and 3, and Practice 2 having afforded practice in automatic tapping, instruction is now given in practical traversing by groups of

TABLE C—Continued.

No.	Nature of Practice.	Rounds.	Method of Conducting and Object of Practice.
			5 to 6 rounds. Five figures to be indicated by the instructor. Gun to be traversed from <i>right to left</i> . Groups should be evenly distributed along the band above and between the figures indicated; there should be no space exceeding 2 inches without a bullet mark.
6	Diagonal Traversing	75	To teach manipulation of the elevating wheel combined with traversing. Gun to be traversed from the left to the second figure from the right of the three bands. The same principles hold good as in Practice 4.
	Total rds. per man	170	

TABLE C—Continued.

Part II,—Classification Practices 9, 10, 11, 12 only.

No.	Nature of Practice.	Target Screen (covered with Regulation Brown Paper).	Range (Yards).	Rounds.	Time (Seconds).	Remarks.
7	Ranging	3' high 10' wide	400	} 50 {	—	In these practices each man has an opportunity of sighting his gun on the open range before firing the classification practices.
8	Ranging	"	600		—	
9	Application	"	400	50	20	
10	Traversing	3' high 30' wide	400	100	50	Gun to be traversed from <i>right to left</i> . The firer is required to traverse the target with the rounds allotted within the time limit without restrictions.
11	Application	3' high 10' wide	600	50	20	
12	Traversing	3' high 30' wide	600	100	50	Gun to be traversed from <i>left to right</i> under the same conditions as in Practice 10.

TABLE C—Continued.

No.	Nature of Practice.	Target Screen (covered with Regulation Brown Paper).	Range (Yards).	Rounds.	Time (Seconds).	Remarks.
13	Observation	3' high 10' wide	900 to* 1200	100	†	Range known approximately. If it is probable that the firer can himself observe, he should apply his fire from such observation. The remainder of the section, except a No. 2 to assist the firer, should form two groups under the sergeant and corporal respectively. These groups should observe the fire by eye or with field-glasses from the flanks. Each N.C.O. and man should note down the result of his observation of each group fired, and at the end of the practice put against

* According to range facilities, nature of ground and climatic conditions.

† No limit, but at a rate of at least 250 rounds a minute.

TABLE C—Continued.

No.	Nature of Practice.	Target Screen (covered with Regulation Brown Paper).	Range (Yards).	Rounds.	Time (Seconds).	Remarks
						each note of his observation the semaphore signal he would have sent had he been required to signal results. If the firer is unable to obtain observation himself, another No., not the No. 2 at the time, will control the fire from observation with field-glasses, the remainder observing from a flank as described above. After each firer has completed the practice, the section officer will criticize the results of the observation as regards methods followed by firer and observers. During this practice the belts may be prepared with artificial stoppages

TABLE C—C continued.

No.	Nature of Practice.	Target Screen (covered with Regulation Brown Paper).	Range (Yards).	Rounds.	Time (Seconds).	Remarks.
14	Fire from successive positions.	15 iron falling plates on a frontage of 30 feet.	800 to 400	100	—	placed after every 20 or 30 rounds in the belt. The time and method required to remedy them should be noted and criticized. Ranges known approximately. Nos. 1, 2, and 3 will fall in with the gun, tripod, and ammunition-box, as for the First Test of Elementary Training, about 100 yards in rear of first fire position which will be approximately 800 yards from the targets. The section officer will mark the first and subsequent fire positions, and, on his signal, the gun, etc., will be carried forward at a steady double,

TABLE C—Continued.

No.	Nature of Practice.	Target Screen (covered with Regulation Brown Paper).	Range (Yards).	Rounds.	Time (Seconds).	Remarks.
						and fire opened without further orders. The gun will be carried dismounted, and the tripod legs will be closed and clamped until the fire position is reached. Fire will be continued at each position until a hit is obtained. Sights will not be adjusted until the new position is reached. At alternate fire positions the firer will adopt the prone position when firing. The objects of this practice are to emphasize the lessons of elementary training as regards quick and correct mounting of the gun and quick opening of fire, and also to exemplify the prin-

TABLE C—Continued.

No.	Nature of Practice.	Target Screen (covered with Regulation Brown Paper).	Range (Yards).	Rounds.	Time (Seconds).	Remarks.
						ciple of maintaining fire until effect is obtained. It is often desirable to time the practice or a portion of it. If the section officer decides to do so, the time should be taken until a hit is obtained—not merely until fire is opened, because this encourages men to open fire without accurate laying. The advance to a fire position should not be a race between detachments if both are carrying out the practice simultaneously, nor against time.

Section 17.—Instruction on Thirty Yards and Miniature Ranges.

1. Rifle Attachment for Miniature Range Practices.—A .22 rifle may be attached to and fired by a machine gun for miniature range practices. The rifle may be fixed on either side of the gun by means of two clamps (Fig. 47). The tangent sight slide is put at zero, and laid on the feet of a figure on the machine gun instructional target (Figs. 48 and 49). The bolt of the rifle is then removed, and the rifle is laid on the above mark by looking through the bore. The clamps are provided with lateral and vertical adjusting nuts to enable this to be done. Sufficient elevation is put on the gun to make shots fired from the rifle strike within the bands of the machine gun target. A wire connects the trigger of the rifle with the firing lever of the machine gun, so that when the double button is pressed the trigger of the rifle is drawn to the rear and the rifle fired. By this method it is only possible to fire single shots, and an assistant is required to reload the rifle after every shot.

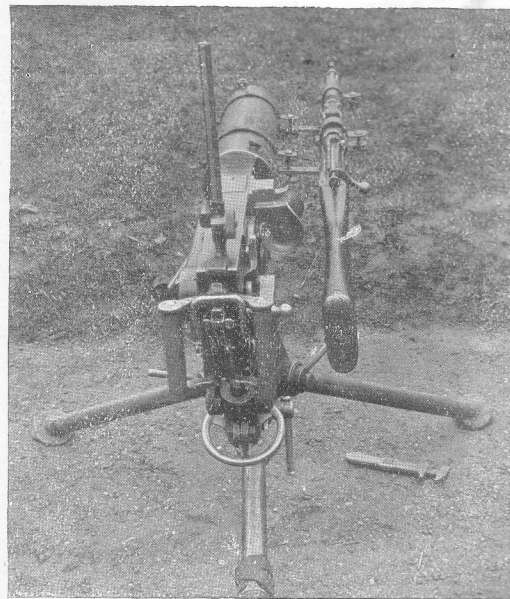


Fig. 47.— MAXIM AND VICKERS MACHINE GUNS. RIFLE ATTACHMENT FOR MINIATURE RANGE PRACTICES.

2. Thirty Yards and Miniature Range Practices.—The following practices may be carried out on 30 yards and miniature ranges. They will serve to expose the faults of gunners, and will prove of value as tests of the standard of efficiency reached by gunners in elementary drill with the gun.

(i) **Holding.**—To teach the firer to maintain consistently the correct holding downward without putting lateral strain on either handle.

(ii) **Single Shot Horizontal Traversing.**—To teach automatic tap of the gun.

(iii) **Vertical Searching.**—To teach automatic manipulation of the elevating wheel.

(iv) **Single Shot Diagonal Traversing.**—To teach the manipulation of the elevating wheel combined with the automatic tap.

3. Notes to Figs. 48 and 49.—(i) Fig. 48 illustrates a machine gun instructional target showing the results of firing each of the six practices of Part I, Table C, on a 30 yards range with 303 ammunition. The various shot groups are numbered according to the practices in which they were fired. In these practices the mechanism of the gun is in play, so that stoppages

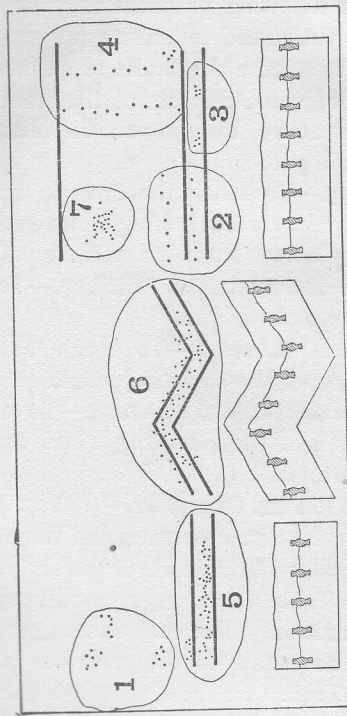


Fig. 48.—MACHINE GUN INSTRUCTIONAL TARGET, SHOWING RESULTS OF FIRING THE PRACTICES IN TABLE C ON A 30 YARDS RANGE.

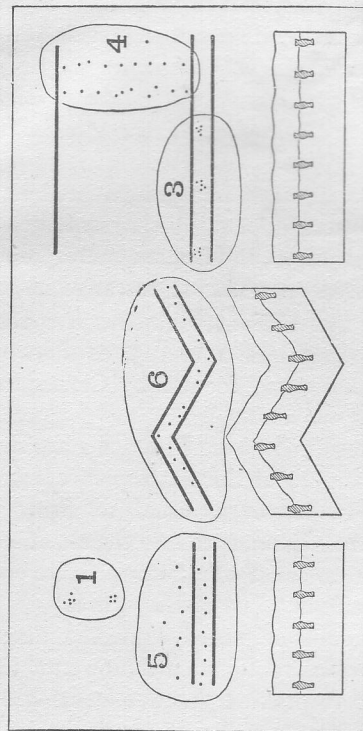


Fig. 49.—MACHINE GUN INSTRUCTIONAL TARGET, SHOWING RESULTS OF FIRING THE PRACTICES IN TABLE C ON A MINIATURE RANGE.

and failures with the immediate action necessary to remedy them can be taught. The group marked 7 in this figure is not the result of firing a practice in Table C, but shows a group of thirty rounds rapid firing discharged to demonstrate the correct holding of the gun in rapid fire.

(ii) In Fig. 49 the shot groups fired in the various practices appear in the same relative position as in Fig. 48. But as these practices have been fired on a miniature range in single shots with the rifle attachment, the results of firing in Practices 2 and 5, as shown by shot groups, become identical. Consequently Practice 2 is omitted.

(iii) The results of firing Practice 1 are shown in Figs. 48 and 49 at the left top corner of the target. It is, however, usual in firing this practice to train gunners to find the exact elevation required to cause the shots to strike on the band when aim is taken at the figures.

(iv) It should be noted that the diagonal bands in the instructional machine gun target are designed to provide practice in firing at an enemy in positions on sloping or uneven ground.

Though this practice is not provided in the machine gun course, it is possible to carry out firing on 30 yards or miniature ranges at targets representing a line of troops stretching obliquely, not parallel, to the firer's front, so that the range is greater at one end of the line than at the other. The target, for such a practice, should have the line on which the bullets are to strike not parallel to the line of figures, but higher at one end than the other, so that a gradual increase of range is necessary in following the line upwards. It should be noted that such a practice is difficult to carry out satisfactorily.

GENERAL MACHINE GUN COURSES

1. The following General Machine Gun Course will, in future, be substituted for all machine gun courses previously authorized.

2. The course will be fired by officers, non-commissioned officers and men of Service machine gun sections belonging to the following units :

New armies.
Reserve units.
Territorial Force units.
Colonial contingents.

3. Reserve machine gun sections will not fire the course, but detachments will be thoroughly instructed in mechanism, drill, etc.

4. No man who has already fired a complete course will carry out the General Machine Gun Course, and men who have commenced a course previously approved will complete it.

5. The following table shows the number of fully trained machine gunners who will fire the course, and must be maintained in regiments or battalions :

Unit.	Officers.	Sergeants.	Corporals.	Privates.
New Armies (Infantry battalions)—				
Service Section	1	2	1	24
Reserve Section*	1	2	1	24
Reserve Cavalry regiments ..	1	1	1	24
Territorial Force—				
Yeomanry regiments	1	1	1	24
Infantry battalions	1	2	1	24
3rd Line dépôts	1	1	1	24
Special and Extra Reserve—				
Infantry battalions	1	1	1	24
2nd Reserve Infantry battalions (supplying three battalions)†	1	1	1	24
2nd Reserve Infantry battalions (supplying two battalions)† ..	1	1	1	18
2nd Reserve Infantry battalions (supplying one battalion)† ..	1	1	1	12
Colonial contingents—				
Cavalry regiments	1	1	1	24
Infantry battalions	1	2	1	24

* See paragraph 3.

† Until the New Army (II.) goes overseas, 2nd Reserve Infantry battalions will all be considered as supplying one battalion for the purposes of this letter.

In draft-producing units the personnel of machine gunners will always be maintained, and as men are drafted others must at once take their place, who will fire the course as soon as they are considered fit to do so.

Commanding Officers must have a certain number of partly trained men always in readiness to take the place of machine gunners who are drafted out of the section.

6. *Ammunition*.—Three hundred rounds per officer, non-commissioned officer and man of Service machine gun section :

New armies	...	...	} Mark VII.
Reserve units	...	...
Colonial contingents	...	...
Territorial Force units	...	Mark VI.	

Ammunition allotted to machine gun sections is not to be expended for rifle firing.

7. Machine gunners of New Army battalions other than 2nd Reserve battalions will not commence the course until authority is given to do so.

COURSES

PART I

				Rounds allotted.
<i>Practice</i> 1.—Grouping	...	...	...	10
„ 2.—Single shot, traversing	...	...	...	10
„ 3.—Application	...	...	...	20
„ 4.—Vertical searching	...	...	...	20
„ 5.—(Omitted.)				
<i>Additional Practice—</i>				
Swinging traverse	...	...	...	30
Repetition	...	...	...	20
				—
				110

PART II

(Range 400 yards for all practices except Practice 14)

			Time, seconds.	Rounds allotted.
<i>Practice</i> 7.—Ranging	...	...	—	20
„ 8.—(Omitted.)				
„ *9.—Application	...	20		30
„ *10.—Traversing	...	50		60
„ 11.—(Omitted.)				
„ 12.—(Omitted.)				

* Classification practices.

	Time, seconds.	Rounds allotted.
<i>Practice</i> 13.—Observation ...	—	20
„ 14.—Fire at successive positions (range 600 yards to 200 yards) ...	... —	40
Total	170
Part I.	110
Part II.	170
Surplus for repetition of in- different shots, to be pooled and used at the discretion of the Commanding Officer		20
Grand total ...		300

NOTES

PART I

1. *Additional Practice*.—For trench warfare and against dense targets *at close range*, the “Swinging Traverse” has been found necessary.

It in no way replaces the method of traversing by automatic tapping, which should still be considered the normal method. The swinging traverse is taught by teaching a man to traverse a machine gun instructional target evenly and smoothly in about six seconds.

PART II

2. *Practice* 10.—It will be necessary to shorten the target, as forty rounds less are allowed for in this practice. This will be done by using two 10 feet screens instead of three. Spaces will be 20 inches.

3. *Practice* 13.—(a) If a field firing range is not available, *Practice* 11 will be substituted for this practice.

(b) Observation should be taken by three parties—left, right, and centre—who should change round after each firer. Section officers should ascertain that each man has observed from each position.

4. *Practice* 14.—Ten rounds will be fired at each of the four distances laid down in *Musketry Regulations*. These rounds will be “spaced

out" before commencing the practice, and the firer will proceed to the next range on completing his ten rounds, whether he has secured a hit or not.

CLASSIFICATION

5. Machine gunners will be classified upon the results which they obtain in Practices 9, and 10, General Machine Gun Course, as follows:

	Points.
To be classified as a "1st Class Gunner" 	50
To be classified as a "Qualified Gunner" 	25

Points will be allotted in the classification practices on the same basis of scoring as laid down in paragraph 647, Musketry Regulations, Part I., 1909 (reprint), 1914.

APPENDIX

MACHINE GUN CORPS

THE Machine Gun Corps will be divided into three branches:

- (a) Cavalry of the Line.
- (b) Infantry of the Line.
- (c) Motor Machine Gun Service.

The Cavalry and Infantry branches will be organized as Brigade Machine Gun Squadrons and Companies, and the Motor Machine Gun Service will be organized as Motor Machine Gun Batteries. The war establishment of a Brigade Machine Gun Company is shown on p. 127 to this Order; that of a Brigade Machine Gun Squadron will be issued later.

2. The rates of pay for officers, warrant officers, non-commissioned officers and men of the three branches of the Machine Gun Corps will be as laid down in the Pay Warrant respectively for—

- (a) Cavalry of the Line.
- (b) Infantry of the Line.
- (c) Royal Field Artillery.

3. Officers with permanent commissions will be seconded, and officers with temporary commissions will be posted, for service with the Machine Gun Corps as required.

The other ranks of the Machine Gun Corps will be composed of warrant officers, non-commissioned officers and men transferred from their present corps to the corresponding branch of the Machine Gun Corps, and also of men enlisted direct into the Machine Gun Corps.

The personnel of Machine Gun Sections in regiments of Cavalry and of battalions of Infantry will, for the present, remain on a regimental basis, and not form part of the Machine Gun Corps.

4. A Machine Gun Record Office will be established at a station which will be notified later.

5. Promotions up to and including the substantive rank of sergeant will be made by the officer commanding the Brigade Machine Gun Squadron or Company on a roster comprising all personnel of the Machine Gun Corps serving in the Brigade Machine Gun Squadron or Company.

6. Promotion to acting colour-sergeant for appointment as acting squadron or company sergeant-major, or acting squadron or company quartermaster-sergeant, will be made provisionally by the officer commanding the Brigade Machine Gun Squadron or Company.

Promotion to colour-sergeant for appointment as squadron or company sergeant-major, or squadron or company quartermaster-sergeant, will be made by the Officer i/c Machine Gun Records for units at home, and by the 3rd Echelon, General Headquarters, for units with the Expeditionary Forces. Separate rosters for promotion above the rank of sergeant will be kept by the Officer i/c Machine Gun Records, or by the 3rd Echelon, General Headquarters, for the personnel of the Machine Gun Corps of each Cavalry or Infantry division at home or in the field respectively.

7. Promotion in the Motor Machine Gun Service up to and including the substantive rank of sergeant and temporary promotion to acting battery sergeant-major will be made by the officer commanding a Motor Machine Gun Battery.

8. Promotion to battery sergeant-major will be made by the Officer i/c Machine Gun Records from a roster kept by him of all sergeants in the Motor Machine Gun Service recommended for promotion by their battery commanders.

MACHINE GUN COMPANY (HEADQUARTERS AND FOUR SECTIONS EACH OF FOUR GUNS)

WAR ESTABLISHMENT

I. Personnel and Horses

Detail.	Personnel.					Horses.				Remarks.		
	Officers.	Warrant Officer.	Staff-Sergeants and Sergeants.	Artificers.	Rank and File.	Total.	Ridings.	Draught.	Heavy Draught.		Total.	Bicycles.
Headquarters (excluding attached)	1	1	2	2	26	32	1	3	—	4	4	
Attached	8	—	8	—	2	18	8	40	—	48	—	
Four Sections	—	—	—	—	100	116	—	—	—	—	—	
Total Company (excluding attached)	9	1	10	2	126	148	9	43	—	52	4	
Total Company (including attached)	9	1	10	2	128	150	9	43	—	52	4	

COMPOSITION IN DETAIL

[illegible]

* Includes one corporal.

* Includes one corporal.

2. Transport

Detail.	Vehicles.	Drivers.	Horses.	
			Draught.	Heavy Draught.
<i>First Line.</i>				
Headquarters—				
Bicycles	4	—	—	—
Carts—				
Cooks	1	1	1	—
Water	1	1	2	—
<i>Each Section—</i>				
Waggons, limbered, G.S.—				
For 4 machine guns, tripods,				
ammunition, and 4 am-				
munition pack saddles*†	2	4	8	—
For ammunition †	1	1	2	—
<i>Train—</i>				
Wagon, G.S., for baggage				
and supplies	1	1	—	2
Total	18	22	3	—

* For lead horses.

* For lead horses.
† Seven thousand rounds in each limbered waggon.

† Eighteen thousand rounds.

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